This document contains your projects for MA 238 Fall 2019. For each project, complete the version number assigned to you based upon the first three letters of your last name, and the last three digits of your Jag#.

- Version 1001: App934
- Version 1002: Bak598
- Version 1003: Bro804
- Version 1004: Caf523
- Version 1005: Cah893
- Version 1006: Can484
- Version 1007: Cul073
- Version 1008: Dai957
- Version 1009: Dra050
- Version 1010: Gip154
- Version 1011: Gre806
- Version 1012: Hal544
- Version 1013: Ham789
- Version 1014: Har595
- Version 1015: Joh752
- Version 1016: Kie408
- Version 1017: Kul640
- Version 1018: Lab056
- Version 1019: Mob478
- Version 1020: Moo750
- Version 1021: Odo107
- Version 1022: Rob423
- Version 1023: Smi972
- Version 1024: Son199
- Version 1025: Van595
- Version 1026: Wal610
- Version 1027: Wil549
- Version 1028: Yat427
- Version 1029: Yoh400

Standard C3m

Version 1001

A water droplet with a radius of 0.000194 meters has a mass of about 2.28×10^{-9} kilograms and a downward terminal velocity of approximately 0.665 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1002

A water droplet with a radius of 0.0000122 meters has a mass of about 5.71×10^{-13} kilograms and a downward terminal velocity of approximately 0.167 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1003

A water droplet with a radius of 0.000226 meters has a mass of about 3.64×10^{-9} kilograms and a downward terminal velocity of approximately 0.719 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1004

A water droplet with a radius of 0.000122 meters has a mass of about 5.77×10^{-10} kilograms and a downward terminal velocity of approximately 0.529 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1005

A water droplet with a radius of 0.000339 meters has a mass of about 1.22×10^{-8} kilograms and a downward terminal velocity of approximately 0.880 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1006

A water droplet with a radius of 0.0000625 meters has a mass of about 7.68×10^{-11} kilograms and a downward terminal velocity of approximately 0.378 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1007

A water droplet with a radius of 0.000387 meters has a mass of about 1.82×10^{-8} kilograms and a downward terminal velocity of approximately 0.940 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1008

A water droplet with a radius of 0.0000821 meters has a mass of about 1.74×10^{-10} kilograms and a downward terminal velocity of approximately 0.433 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1009

A water droplet with a radius of 0.0000836 meters has a mass of about 1.83×10^{-10} kilograms and a downward terminal velocity of approximately 0.437 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1010

A water droplet with a radius of 0.0000212 meters has a mass of about 2.99×10^{-12} kilograms and a downward terminal velocity of approximately 0.220 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1011

A water droplet with a radius of 0.0000635 meters has a mass of about 8.05×10^{-11} kilograms and a downward terminal velocity of approximately 0.381 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1012

A water droplet with a radius of 0.0000282 meters has a mass of about 7.07×10^{-12} kilograms and a downward terminal velocity of approximately 0.254 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1013

A water droplet with a radius of 0.000156 meters has a mass of about 1.19×10^{-9} kilograms and a downward terminal velocity of approximately 0.597 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1014

A water droplet with a radius of 0.000253 meters has a mass of about 5.07×10^{-9} kilograms and a downward terminal velocity of approximately 0.760 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1015

A water droplet with a radius of 0.000358 meters has a mass of about 1.44×10^{-8} kilograms and a downward terminal velocity of approximately 0.904 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1016

A water droplet with a radius of 0.000134 meters has a mass of about 7.53×10^{-10} kilograms and a downward terminal velocity of approximately 0.553 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1017

A water droplet with a radius of 0.0000874 meters has a mass of about 2.10×10^{-10} kilograms and a downward terminal velocity of approximately 0.447 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1018

A water droplet with a radius of 0.000169 meters has a mass of about 1.51×10^{-9} kilograms and a downward terminal velocity of approximately 0.621 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1019

A water droplet with a radius of 0.000171 meters has a mass of about 1.58×10^{-9} kilograms and a downward terminal velocity of approximately 0.626 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1020

A water droplet with a radius of 0.000130 meters has a mass of about 6.98×10^{-10} kilograms and a downward terminal velocity of approximately 0.546 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1021

A water droplet with a radius of 0.000267 meters has a mass of about 5.98×10^{-9} kilograms and a downward terminal velocity of approximately 0.781 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.03 seconds.

Version 1022

A water droplet with a radius of 0.0000533 meters has a mass of about 4.76×10^{-11} kilograms and a downward terminal velocity of approximately 0.349 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1023

A water droplet with a radius of 0.000334 meters has a mass of about 1.17×10^{-8} kilograms and a downward terminal velocity of approximately 0.873 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1024

A water droplet with a radius of 0.0000802 meters has a mass of about 1.62×10^{-10} kilograms and a downward terminal velocity of approximately 0.428 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1025

A water droplet with a radius of 0.0000798 meters has a mass of about 1.60×10^{-10} kilograms and a downward terminal velocity of approximately 0.427 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1026

A water droplet with a radius of 0.000405 meters has a mass of about 2.09×10^{-8} kilograms and a downward terminal velocity of approximately 0.962 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1027

A water droplet with a radius of 0.000301 meters has a mass of about 8.61×10^{-9} kilograms and a downward terminal velocity of approximately 0.830 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 m/s^2. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1028

A water droplet with a radius of 0.0000389 meters has a mass of about 1.84×10^{-11} kilograms and a downward terminal velocity of approximately 0.298 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.02 seconds.

Version 1029

A water droplet with a radius of 0.0000378 meters has a mass of about 1.70×10^{-11} kilograms and a downward terminal velocity of approximately 0.294 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Version 1030

A water droplet with a radius of 0.000344 meters has a mass of about 1.27×10^{-8} kilograms and a downward terminal velocity of approximately 0.886 meters per second.

Write an initial value problem (IVP) modeling the velocity of this water droplet when dropped from rest, assuming that the acceleration due to gravity is roughly 9.8 $\mathrm{m/s^2}$. Then solve this IVP to compute the droplet's velocity after 0.04 seconds.

Standard C7m

Version 1001

A mass of 16 kg is attached to a certain spring such that 125 Newtons of force is required to stretch the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 6.3 seconds.

Version 1002

A mass of 4 kg is attached to a certain spring such that 45 Newtons of force is required to compress the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.7 seconds.

Version 1003

A mass of 16 kg is attached to a certain spring such that 12 Newtons of force is required to compress the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 7.1 seconds.

Version 1004

A mass of 9 kg is attached to a certain spring such that 48 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 2.5 seconds.

Version 1005

A mass of 25 kg is attached to a certain spring such that 80 Newtons of force is required to compress the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 5.6 seconds.

Version 1006

A mass of 9 kg is attached to a certain spring such that 12 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 2.0 seconds.

Version 1007

A mass of 25 kg is attached to a certain spring such that 20 Newtons of force is required to compress the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 4.1 seconds.

Version 1008

A mass of 9 kg is attached to a certain spring such that 64 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 5.1 seconds.

Version 1009

A mass of 9 kg is attached to a certain spring such that 75 Newtons of force is required to compress the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 7.0 seconds.

Version 1010

A mass of 4 kg is attached to a certain spring such that 27 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.0 seconds.

Version 1011

A mass of 9 kg is attached to a certain spring such that 125 Newtons of force is required to stretch the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 3.3 seconds.

Version 1012

A mass of 4 kg is attached to a certain spring such that 32 Newtons of force is required to stretch the mass 2 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 4.0 seconds.

Version 1013

A mass of 16 kg is attached to a certain spring such that 75 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 5.8 seconds.

Version 1014

A mass of 16 kg is attached to a certain spring such that 16 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 9.5 seconds.

Version 1015

A mass of 25 kg is attached to a certain spring such that 64 Newtons of force is required to compress the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 2.1 seconds.

Version 1016

A mass of 16 kg is attached to a certain spring such that 8 Newtons of force is required to stretch the mass 2 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.8 seconds.

Version 1017

A mass of 9 kg is attached to a certain spring such that 100 Newtons of force is required to compress the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.5 seconds.

Version 1018

A mass of 16 kg is attached to a certain spring such that 100 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 4.3 seconds.

Version 1019

A mass of 16 kg is attached to a certain spring such that 75 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.7 seconds.

Version 1020

A mass of 9 kg is attached to a certain spring such that 64 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 9.6 seconds.

Version 1021

A mass of 25 kg is attached to a certain spring such that 27 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 5.2 seconds.

Version 1022

A mass of 9 kg is attached to a certain spring such that 125 Newtons of force is required to compress the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 7.6 seconds.

Version 1023

A mass of 25 kg is attached to a certain spring such that 12 Newtons of force is required to stretch the mass 3 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.9 seconds.

Version 1024

A mass of 9 kg is attached to a certain spring such that 16 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 3.9 seconds.

Version 1025

A mass of 9 kg is attached to a certain spring such that 64 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 2.3 seconds.

Version 1026

A mass of 25 kg is attached to a certain spring such that 20 Newtons of force is required to compress the mass 5 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 1.1 seconds.

Version 1027

A mass of 25 kg is attached to a certain spring such that 8 Newtons of force is required to stretch the mass 2 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 9.7 seconds.

Version 1028

A mass of 4 kg is attached to a certain spring such that 50 Newtons of force is required to stretch the mass 2 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 2.6 seconds.

Version 1029

A mass of 4 kg is attached to a certain spring such that 64 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 4.4 seconds.

Version 1030

A mass of 25 kg is attached to a certain spring such that 16 Newtons of force is required to stretch the mass 4 meters from its natural position.

Write an initial value problem (IVP) modeling the position of this mass when released from rest. Then solve this IVP to compute the mass's position after 8.9 seconds.

Standard F3m

Version 1001

A mass of 7 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 47.8 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 8 seconds.

Version 1002

A mass of 2 kg is thrown horizontally with an initial velocity of 5 meters per second, experiencing an initial air resistance of 3.50 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 9 seconds.

Version 1003

A mass of 7 kg is thrown horizontally with an initial velocity of 3 meters per second, experiencing an initial air resistance of 5.31 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1004

A mass of 5 kg is thrown horizontally with an initial velocity of 6 meters per second, experiencing an initial air resistance of 12.6 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1005

A mass of 8 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 59.9 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 6 seconds.

Version 1006

A mass of 4 kg is thrown horizontally with an initial velocity of 2 meters per second, experiencing an initial air resistance of 1.04 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1007

A mass of 9 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 73.7 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 2 seconds.

Version 1008

A mass of 4 kg is thrown horizontally with an initial velocity of 4 meters per second, experiencing an initial air resistance of 4.16 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1009

A mass of 5 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 28.3 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1010

A mass of 3 kg is thrown horizontally with an initial velocity of 5 meters per second, experiencing an initial air resistance of 4.75 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 5 seconds.

Version 1011

A mass of 4 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 21.1 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 8 seconds.

Version 1012

A mass of 3 kg is thrown horizontally with an initial velocity of 2 meters per second, experiencing an initial air resistance of 0.760 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1013

A mass of 6 kg is thrown horizontally with an initial velocity of 8 meters per second, experiencing an initial air resistance of 29.4 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 5 seconds.

Version 1014

A mass of 7 kg is thrown horizontally with an initial velocity of 3 meters per second, experiencing an initial air resistance of 5.31 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1015

A mass of 9 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 73.7 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1016

A mass of 6 kg is thrown horizontally with an initial velocity of 2 meters per second, experiencing an initial air resistance of 1.84 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 2 seconds.

Version 1017

A mass of 5 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 28.3 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 6 seconds.

Version 1018

A mass of 6 kg is thrown horizontally with an initial velocity of 8 meters per second, experiencing an initial air resistance of 29.4 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1019

A mass of 6 kg is thrown horizontally with an initial velocity of 8 meters per second, experiencing an initial air resistance of 29.4 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1020

A mass of 5 kg is thrown horizontally with an initial velocity of 7 meters per second, experiencing an initial air resistance of 17.2 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1021

A mass of 8 kg is thrown horizontally with an initial velocity of 5 meters per second, experiencing an initial air resistance of 18.5 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1022

A mass of 4 kg is thrown horizontally with an initial velocity of 4 meters per second, experiencing an initial air resistance of 4.16 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 8 seconds.

Version 1023

A mass of 8 kg is thrown horizontally with an initial velocity of 3 meters per second, experiencing an initial air resistance of 6.66 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 4 seconds.

Version 1024

A mass of 4 kg is thrown horizontally with an initial velocity of 2 meters per second, experiencing an initial air resistance of 1.04 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1025

A mass of 4 kg is thrown horizontally with an initial velocity of 7 meters per second, experiencing an initial air resistance of 12.7 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 6 seconds.

Version 1026

A mass of 9 kg is thrown horizontally with an initial velocity of 3 meters per second, experiencing an initial air resistance of 8.19 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 9 seconds.

Version 1027

A mass of 8 kg is thrown horizontally with an initial velocity of 3 meters per second, experiencing an initial air resistance of 6.66 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 2 seconds.

Version 1028

A mass of 3 kg is thrown horizontally with an initial velocity of 2 meters per second, experiencing an initial air resistance of 0.760 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 9 seconds.

Version 1029

A mass of 3 kg is thrown horizontally with an initial velocity of 7 meters per second, experiencing an initial air resistance of 9.31 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 7 seconds.

Version 1030

A mass of 8 kg is thrown horizontally with an initial velocity of 9 meters per second, experiencing an initial air resistance of 59.9 Newtons. Assume that acceleration due to gravity is roughly 9.81 m/s^2.

Write an initial value problem (IVP) modeling the horizontal velocity of this mass. Then solve this IVP to compute the mass's horizontal velocity after 2 seconds.

Standard S2m

Version 1001

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 1 meters inwards from its natural position, while the outer mass is moved $\frac{61}{6}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 2 seconds.

Version 1002

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 14 N/m, the outer spring has constant 6 N/m. The inner mass is moved 1 meters inwards from its natural position, while the outer mass is moved $\frac{29}{3}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1003

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 4 N/m, the outer spring has constant 6 N/m. The inner mass is moved 9 meters inwards from its natural position, while the outer mass is moved $\frac{13}{3}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1004

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 4 N/m, the outer spring has constant 2 N/m. The inner mass is moved 8 meters inwards from its natural position, while the outer mass is moved 1 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1005

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 4 N/m, the outer spring has constant 2 N/m. The inner mass is moved 1 meters outwards from its natural position, while the outer mass is moved 14 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1006

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 5 N/m, the outer spring has constant 4 N/m. The inner mass is moved 3 meters outwards from its natural position, while the outer mass is moved $\frac{21}{4}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1007

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 1 meters inwards from its natural position, while the outer mass is moved $\frac{28}{3}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1008

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 3 N/m, the outer spring has constant 2 N/m. The inner mass is moved 0 meters outwards from its natural position, while the outer mass is moved 5 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1009

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 3 N/m, the outer spring has constant 2 N/m. The inner mass is moved 7 meters inwards from its natural position, while the outer mass is moved 9 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1010

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 10 N/m, the outer spring has constant 12 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved $\frac{1}{2}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1011

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 5 N/m, the outer spring has constant 4 N/m. The inner mass is moved 7 meters outwards from its natural position, while the outer mass is moved $\frac{11}{4}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 2 seconds.

Version 1012

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 5 meters outwards from its natural position, while the outer mass is moved 1 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 2 seconds.

Version 1013

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 15 N/m, the outer spring has constant 4 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved 7 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 4 seconds.

Version 1014

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 8 meters outwards from its natural position, while the outer mass is moved $\frac{7}{6}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 4 seconds.

Version 1015

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 15 N/m, the outer spring has constant 4 N/m. The inner mass is moved 7 meters outwards from its natural position, while the outer mass is moved $\frac{27}{4}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1016

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved $\frac{5}{2}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1017

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 7 meters inwards from its natural position, while the outer mass is moved $\frac{37}{6}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1018

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 3 N/m, the outer spring has constant 2 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved 2 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 2 seconds.

Version 1019

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 10 N/m, the outer spring has constant

12 N/m. The inner mass is moved 4 meters inwards from its natural position, while the outer mass is moved $\frac{1}{3}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1020

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 15 N/m, the outer spring has constant 4 N/m. The inner mass is moved 1 meters inwards from its natural position, while the outer mass is moved 21 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 4 seconds.

Version 1021

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 3 N/m, the outer spring has constant 2 N/m. The inner mass is moved 1 meters outwards from its natural position, while the outer mass is moved 7 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1022

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 5 N/m, the outer spring has constant 4 N/m. The inner mass is moved 0 meters outwards from its natural position, while the outer mass is moved 9 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1023

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 10 N/m, the outer spring has constant 12 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved $\frac{10}{3}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 2 seconds.

Version 1024

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 4 N/m, the outer spring has constant 2 N/m. The inner mass is moved 1 meters inwards from its natural position, while the outer mass is moved 8 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1025

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 4 N/m, the outer spring has constant 2 N/m. The inner mass is moved 0 meters outwards from its natural position, while the outer mass is moved 12 meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 4 seconds.

Version 1026

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 2 kg, the inner spring has constant 14 N/m, the outer spring has constant 6 N/m. The inner mass is moved 0 meters outwards from its natural position, while the outer mass is moved $\frac{95}{6}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Version 1027

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 10 N/m, the outer spring has constant 12 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved $\frac{7}{3}$ meters outwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 4 seconds.

Version 1028

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 10 N/m, the outer spring has constant 12 N/m. The inner mass is moved 6 meters outwards from its natural position, while the outer mass is moved $\frac{1}{2}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1029

Consider a coupled mass-spring system where the inner mass is 1 kg, the outer mass is 1 kg, the inner spring has constant 5 N/m, the outer spring has constant 6 N/m. The inner mass is moved 7 meters inwards from its natural position, while the outer mass is moved $\frac{37}{6}$ meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 3 seconds.

Version 1030

Consider a coupled mass-spring system where the inner mass is 2 kg, the outer mass is 1 kg, the inner spring has constant 4 N/m, the outer spring has constant 2 N/m. The inner mass is moved 1 meters outwards from its natural position, while the outer mass is moved 7 meters inwards from its natural position. Both masses are then simultaneously released from rest.

Give a system of IVPs that models this scenario, then solve the system. Use your solution to find the position of both masses after 5 seconds.

Standard S4m

Version 1001

Two species, magentafish and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dM}{dt} = -\frac{3}{500}\,M^2 - \frac{9}{1000}\,MY + \frac{27}{25}\,M$$

$$\frac{dY}{dt} = -\frac{1}{100}\,MY - \frac{1}{200}\,Y^2 + Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 118 magentafish and 22 yellowgill, determine the long-term survival of both species.

Version 1002

Two species, magentafish and greenfish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dM}{dt} = -\frac{1}{50}\,GM - \frac{1}{125}\,M^2 + \frac{8}{5}\,M$$

$$\frac{dG}{dt} = -\frac{1}{100}\,G^2 - \frac{3}{250}\,GM + \frac{6}{5}\,G$$

Draw an appropriate phase plane. Then, assuming that the current population is 119 magentafish and 18 greenfish, determine the long-term survival of both species.

Version 1003

Two species, redfish and greenfish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dR}{dt} = -\frac{1}{50}\,GR - \frac{1}{125}\,R^2 + 8\,R$$

$$\frac{dG}{dt} = -\frac{1}{100}\,G^2 - \frac{3}{250}\,GR + 6\,G$$

Draw an appropriate phase plane. Then, assuming that the current population is 598 redfish and 102 greenfish, determine the long-term survival of both species.

Version 1004

Two species, greenfish and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{3}{500}\,G^2 - \frac{3}{250}\,GY + \frac{36}{25}\,G$$

$$\frac{dY}{dt} = -\frac{1}{100}\,GY - \frac{1}{250}\,Y^2 + \frac{4}{5}\,Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 100 greenfish and 38 yellowgill, determine the long-term survival of both species.

Version 1005

Two species, purplegill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{9}{1000}\,MP - \frac{3}{500}\,P^2 + \frac{27}{10}\,P$$

$$\frac{dM}{dt} = -\frac{1}{200}\,M^2 - \frac{1}{100}\,MP + \frac{5}{2}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 301 purplegill and 49 magentafish, determine the long-term survival of both species.

Version 1006

Two species, redfish and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dR}{dt} = -\frac{1}{250}\,MR - \frac{1}{100}\,R^2 + \frac{2}{5}\,R$$

$$\frac{dM}{dt} = -\frac{3}{250}\,M^2 - \frac{3}{500}\,MR + \frac{18}{25}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 51 redfish and 21 magentafish, determine the long-term survival of both species.

Version 1007

Two species, bluegill and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dB}{dt} = -\frac{1}{100}\,B^2 - \frac{1}{250}\,BY + 2\,B$$

$$\frac{dY}{dt} = -\frac{3}{500}\,BY - \frac{3}{250}\,Y^2 + \frac{18}{5}\,Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 250 bluegill and 99 yellowgill, determine the long-term survival of both species.

Version 1008

Two species, redfish and purplegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dR}{dt} = -\frac{9}{1000}\,PR - \frac{3}{500}\,R^2 + \frac{27}{25}\,R$$

$$\frac{dP}{dt} = -\frac{1}{200}\,P^2 - \frac{1}{100}\,PR + P$$

Draw an appropriate phase plane. Then, assuming that the current population is 120 redfish and 22 purplegill, determine the long-term survival of both species.

Version 1009

Two species, greenfish and redfish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{3}{250}\,G^2 - \frac{1}{100}\,GR + \frac{12}{5}\,G$$

$$\frac{dR}{dt} = -\frac{1}{125}\,GR - \frac{1}{50}\,R^2 + \frac{16}{5}\,R$$

Draw an appropriate phase plane. Then, assuming that the current population is 242 greenfish and 42 redfish, determine the long-term survival of both species.

Version 1010

Two species, greenfish and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{1}{125}\,G^2 - \frac{1}{50}\,GY + \frac{8}{5}\,G$$

$$\frac{dY}{dt} = -\frac{3}{250}\,GY - \frac{1}{100}\,Y^2 + \frac{6}{5}\,Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 119 greenfish and 19 yellowgill, determine the long-term survival of both species.

Version 1011

Two species, yellowgill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dY}{dt} = -\frac{3}{250}\,MY - \frac{3}{500}\,Y^2 + \frac{18}{25}\,Y$$

$$\frac{dM}{dt} = -\frac{1}{250}\,M^2 - \frac{1}{100}\,MY + \frac{2}{5}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 50 yellowgill and 18 magentafish, determine the long-term survival of both species.

Version 1012

Two species, purplegill and bluegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{1}{100}\,BP - \frac{3}{250}\,P^2 + \frac{6}{5}\,P$$

$$\frac{dB}{dt} = -\frac{1}{50}\,B^2 - \frac{1}{125}\,BP + \frac{8}{5}\,B$$

Draw an appropriate phase plane. Then, assuming that the current population is 118 purplegill and 20 bluegill, determine the long-term survival of both species.

Version 1013

Two species, greenfish and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{1}{100}\,G^2 - \frac{1}{200}\,GM + G$$

$$\frac{dM}{dt} = -\frac{3}{500}\,GM - \frac{9}{1000}\,M^2 + \frac{27}{25}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 118 greenfish and 19 magentafish, determine the long-term survival of both species.

Version 1014

Two species, yellowgill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dY}{dt} = -\frac{1}{50}\,MY - \frac{1}{125}\,Y^2 + 8\,Y$$

$$\frac{dM}{dt} = -\frac{1}{100}\,M^2 - \frac{3}{250}\,MY + 6\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 598 yellowgill and 102 magentafish, determine the long-term survival of both species.

Version 1015

Two species, yellowgill and purplegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dY}{dt} = -\frac{1}{250}\,PY - \frac{1}{100}\,Y^2 + 2\,Y$$

$$\frac{dP}{dt} = -\frac{3}{250}\,P^2 - \frac{3}{500}\,PY + \frac{18}{5}\,P$$

Draw an appropriate phase plane. Then, assuming that the current population is 249 yellowgill and 99 purplegill, determine the long-term survival of both species.

Version 1016

Two species, bluegill and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dB}{dt} = -\frac{1}{125}\,B^2 - \frac{1}{50}\,BY + \frac{16}{5}\,B$$

$$\frac{dY}{dt} = -\frac{3}{250}\,BY - \frac{1}{100}\,Y^2 + \frac{12}{5}\,Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 240 bluegill and 38 yellowgill, determine the long-term survival of both species.

Version 1017

Two species, purplegill and bluegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{1}{100}\,BP - \frac{3}{250}\,P^2 + \frac{12}{5}\,P$$

$$\frac{dB}{dt} = -\frac{1}{50}\,B^2 - \frac{1}{125}\,BP + \frac{16}{5}\,B$$

Draw an appropriate phase plane. Then, assuming that the current population is 241 purplegill and 39 bluegill, determine the long-term survival of both species.

Version 1018

Two species, purplegill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{9}{1000}\,MP - \frac{3}{500}\,P^2 + \frac{27}{25}\,P$$

$$\frac{dM}{dt} = -\frac{1}{200}\,M^2 - \frac{1}{100}\,MP + M$$

Draw an appropriate phase plane. Then, assuming that the current population is 120 purplegill and 20 magentafish, determine the long-term survival of both species.

Version 1019

Two species, redfish and purplegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dR}{dt} = -\frac{1}{50}\,PR - \frac{1}{125}\,R^2 + \frac{16}{5}\,R$$

$$\frac{dP}{dt} = -\frac{1}{100}\,P^2 - \frac{3}{250}\,PR + \frac{12}{5}\,P$$

Draw an appropriate phase plane. Then, assuming that the current population is 238 redfish and 42 purplegill, determine the long-term survival of both species.

Version 1020

Two species, purplegill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{1}{50}\,MP - \frac{1}{125}\,P^2 + \frac{16}{5}\,P$$

$$\frac{dM}{dt} = -\frac{1}{100}\,M^2 - \frac{3}{250}\,MP + \frac{12}{5}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 242 purplegill and 38 magentafish, determine the long-term survival of both species.

Version 1021

Two species, greenfish and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{3}{500}\,G^2 - \frac{9}{1000}\,GM + \frac{27}{10}\,G$$

$$\frac{dM}{dt} = -\frac{1}{100}\,GM - \frac{1}{200}\,M^2 + \frac{5}{2}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 300 greenfish and 51 magentafish, determine the long-term survival of both species.

Version 1022

Two species, yellowgill and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dY}{dt} = -\frac{3}{250}\,MY - \frac{3}{500}\,Y^2 + \frac{18}{25}\,Y$$

$$\frac{dM}{dt} = -\frac{1}{250}\,M^2 - \frac{1}{100}\,MY + \frac{2}{5}\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 48 yellowgill and 22 magentafish, determine the long-term survival of both species.

Version 1023

Two species, greenfish and magentafish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dG}{dt} = -\frac{1}{125}\,G^2 - \frac{1}{50}\,GM + 8\,G$$

$$\frac{dM}{dt} = -\frac{3}{250}\,GM - \frac{1}{100}\,M^2 + 6\,M$$

Draw an appropriate phase plane. Then, assuming that the current population is 599 greenfish and 99 magentafish, determine the long-term survival of both species.

Version 1024

Two species, purplegill and redfish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{3}{500}\,P^2 - \frac{3}{250}\,PR + \frac{36}{25}\,P$$

$$\frac{dR}{dt} = -\frac{1}{100}\,PR - \frac{1}{250}\,R^2 + \frac{4}{5}\,R$$

Draw an appropriate phase plane. Then, assuming that the current population is 99 purplegill and 39 redfish, determine the long-term survival of both species.

Version 1025

Two species, purplegill and bluegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dP}{dt} = -\frac{1}{50}\,BP - \frac{1}{125}\,P^2 + \frac{16}{5}\,P$$

$$\frac{dB}{dt} = -\frac{1}{100}\,B^2 - \frac{3}{250}\,BP + \frac{12}{5}\,B$$

Draw an appropriate phase plane. Then, assuming that the current population is 242 purplegill and 41 bluegill, determine the long-term survival of both species.

Version 1026

Two species, magentafish and greenfish, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dM}{dt} = -\frac{1}{250}\,GM - \frac{1}{100}\,M^2 + 2\,M$$

$$\frac{dG}{dt} = -\frac{3}{250}\,G^2 - \frac{3}{500}\,GM + \frac{18}{5}\,G$$

Draw an appropriate phase plane. Then, assuming that the current population is 249 magentafish and 101 greenfish, determine the long-term survival of both species.

Version 1027

Two species, bluegill and yellowgill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dB}{dt} = -\frac{1}{125}\,B^2 - \frac{1}{50}\,BY + 8\,B$$

$$\frac{dY}{dt} = -\frac{3}{250}\,BY - \frac{1}{100}\,Y^2 + 6\,Y$$

Draw an appropriate phase plane. Then, assuming that the current population is 602 bluegill and 98 yellowgill, determine the long-term survival of both species.

Version 1028

Two species, magentafish and bluegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dM}{dt} = -\frac{1}{200}\,BM - \frac{1}{100}\,M^2 + \frac{1}{2}\,M$$

$$\frac{dB}{dt} = -\frac{9}{1000}\,B^2 - \frac{3}{500}\,BM + \frac{27}{50}\,B$$

Draw an appropriate phase plane. Then, assuming that the current population is 59 magentafish and 8 bluegill, determine the long-term survival of both species.

Version 1029

Two species, yellowgill and purplegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dY}{dt} = -\frac{1}{200}\,PY - \frac{1}{100}\,Y^2 + \frac{1}{2}\,Y$$

$$\frac{dP}{dt} = -\frac{9}{1000}\,P^2 - \frac{3}{500}\,PY + \frac{27}{50}\,P$$

Draw an appropriate phase plane. Then, assuming that the current population is 60 yellowgill and 9 purplegill, determine the long-term survival of both species.

Version 1030

Two species, bluegill and purplegill, compete for the same resources. Suppose their populations satisfy the following system of ODEs:

$$\frac{dB}{dt} = -\frac{1}{125}\,B^2 - \frac{1}{50}\,BP + 8\,B$$

$$\frac{dP}{dt} = -\frac{3}{250}\,BP - \frac{1}{100}\,P^2 + 6\,P$$

Draw an appropriate phase plane. Then, assuming that the current population is 600 bluegill and 102 purplegill, determine the long-term survival of both species.

Standard N3m

Version 1001

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(1.3)$ and $y(1.3)$ given the following system of IVPs.

$$x' = -tx^2 - 3\,xy - 2 \qquad x(1) = -1$$

$$y' = t^2y - 2\,tx + 3 \qquad y(1) = 2$$

Version 1002

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(2.3)$ and $y(2.3)$ given the following system of IVPs.

$$x' = -tx + 4\,xy - 1 \qquad x(2) = 0$$

$$y' = -4\,tx^2 - 4\,ty^2 + 1 \qquad y(2) = 1$$

Version 1003

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(-0.40)$ and $y(-0.40)$ given the following system of IVPs.

$$x' = -2\,ty^2 + 3\,xy^2 + 2 \qquad x(-1) = 2$$

$$y' = 4\,ty^2 - xy + 2 \qquad y(-1) = 1$$

Version 1004

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(0.60)$ and $y(0.60)$ given the following system of IVPs.

$$x' = -2\,t^2x - 3\,ty^2 + 2 \qquad x(0) = 0$$

$$y' = -3\,t^2x + 4\,t^2y + 2 \qquad y(0) = -1$$

Version 1005

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(0.30)$ and $y(0.30)$ given the following system of IVPs.

$$x' = -2\,x^2y^2 - 2\,tx^2 + 3 \qquad x(0) = 1$$

$$y' = -3\,x^2y^2 - 4\,ty + 3 \qquad y(0) = -1$$

Version 1006

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(-1.4)$ and $y(-1.4)$ given the following system of IVPs.

$$x' = -x^2y^2 - 2\,t^2x - 1 \qquad x(-2) = -2$$

$$y' = 2\,t^2y^2 + 4\,x^2y - 1 \qquad y(-2) = -1$$

Version 1007

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(2.6)$ and $y(2.6)$ given the following system of IVPs.

$$x' = 3\,ty^2 + 3\,xy^2 - 2 \qquad x(2) = 0$$

$$y' = -t^2y - 3\,xy + 3 \qquad y(2) = -2$$

Version 1008

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(1.3)$ and $y(1.3)$ given the following system of IVPs.

$$x' = -2\,t^2x + 3\,x^2y - 1 \qquad x(1) = 0$$

$$y' = 4\,t^2y + 3\,xy + 2 \qquad y(1) = 2$$

Version 1009

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(0.60)$ and $y(0.60)$ given the following system of IVPs.

$$x' = 4\,t^2y^2 + 3\,tx^2 \qquad x(0) = -2$$

$$y' = -4\,tx^2 + 2\,ty^2 \qquad y(0) = 2$$

Version 1010

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-1.7)$ and $y(-1.7)$ given the following system of IVPs.

$$x' = -tx^2 - 4\,x^2y \qquad x(-2) = 1$$

$$y' = -4\,t^2x + 4\,xy^2 \qquad y(-2) = 2$$

Version 1011

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(-1.4)$ and $y(-1.4)$ given the following system of IVPs.

$$x' = 2\,x^2y + 2\,tx - 1 \qquad x(-2) = 2$$

$$y' = t^2y + tx + 2 \qquad y(-2) = -1$$

Version 1012

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = -4\,t^2y^2 - 4\,t^2x + 3 \qquad x(-1) = 0$$

$$y' = -4\,t^2x + 2\,t^2y + 3 \qquad y(-1) = 2$$

Version 1013

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(0.30)$ and $y(0.30)$ given the following system of IVPs.

$$x' = -4\,t^2y + 2\,xy + 2 \qquad x(0) = -2$$

$$y' = -2\,t^2x + 3\,ty + 3 \qquad y(0) = -2$$

Version 1014

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-1.7)$ and $y(-1.7)$ given the following system of IVPs.

$$x' = -3\,ty^2 + 2\,xy^2 - 2 \qquad x(-2) = 2$$

$$y' = -2\,tx + 2\,xy + 3 \qquad y(-2) = -1$$

Version 1015

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = 3\,t^2y^2 - x^2y^2 - 2 \qquad x(-1) = -1$$

$$y' = -t^2y^2 + 3\,x^2y \qquad y(-1) = -1$$

Version 1016

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(2.3)$ and $y(2.3)$ given the following system of IVPs.

$$x' = 4\,x^2y - 3\,tx + 3 \qquad x(2) = -1$$

$$y' = -2\,t^2x^2 + 4\,xy + 3 \qquad y(2) = 2$$

Version 1017

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(2.3)$ and $y(2.3)$ given the following system of IVPs.

$$x' = 4\,tx^2 - x^2y + 1 \qquad x(2) = 0$$

$$y' = -2\,t^2x + 3\,ty^2 \qquad y(2) = -2$$

Version 1018

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = -t^2y + 2\,xy - 1 \qquad x(-1) = 1$$

$$y' = 3\,xy^2 - 4\,tx \qquad y(-1) = -2$$

Version 1019

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(2.6)$ and $y(2.6)$ given the following system of IVPs.

$$x' = -4\,tx - 2\,xy \qquad x(2) = -2$$

$$y' = 2\,x^2y + ty \qquad y(2) = -1$$

Version 1020

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(1.3)$ and $y(1.3)$ given the following system of IVPs.

$$x' = t^2x^2 + 4\,t^2y + 3 \qquad x(1) = -2$$

$$y' = 3\,x^2y^2 + 4\,ty^2 - 2 \qquad y(1) = -2$$

Version 1021

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(1.3)$ and $y(1.3)$ given the following system of IVPs.

$$x' = -4\,t^2x + 2\,xy + 2 \qquad x(1) = 1$$

$$y' = t^2x^2 - 3\,t^2y^2 + 2 \qquad y(1) = 1$$

Version 1022

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(2.6)$ and $y(2.6)$ given the following system of IVPs.

$$x' = -4\,t^2y^2 + 3\,x^2y^2 - 1 \qquad x(2) = -2$$

$$y' = tx^2 + xy^2 - 2 \qquad y(2) = -2$$

Version 1023

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(-1.4)$ and $y(-1.4)$ given the following system of IVPs.

$$x' = -4\,t^2y^2 + 3\,x^2y^2 - 2 \qquad x(-2) = 2$$

$$y' = -2\,t^2y^2 + 2\,xy^2 \qquad y(-2) = 2$$

Version 1024

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(2.6)$ and $y(2.6)$ given the following system of IVPs.

$$x' = -2\,tx + 3\,ty - 3 \qquad x(2) = 2$$

$$y' = -t^2y^2 + 3\,x^2y + 1 \qquad y(2) = 1$$

Version 1025

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(1.6)$ and $y(1.6)$ given the following system of IVPs.

$$x' = -4\,tx - 4\,xy \qquad x(1) = 1$$

$$y' = 3\,t^2x^2 + 2\,x^2y + 3 \qquad y(1) = -1$$

Version 1026

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = -4\,t^2x + 4\,xy^2 + 2 \qquad x(-1) = 1$$

$$y' = 4\,ty^2 + 2\,xy^2 + 3 \qquad y(-1) = 0$$

Version 1027

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = -4\,tx^2 + t^2y + 2 \qquad x(-1) = 1$$

$$y' = 4\,t^2y + tx - 1 \qquad y(-1) = -1$$

Version 1028

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(0.60)$ and $y(0.60)$ given the following system of IVPs.

$$x' = t^2x^2 + 3\,xy^2 - 2 \qquad x(0) = 0$$

$$y' = -ty^2 - 2\,tx - 1 \qquad y(0) = 0$$

Version 1029

Use technology to implement Euler's method with $h = 0.010$ to approximate $x(-0.70)$ and $y(-0.70)$ given the following system of IVPs.

$$x' = tx^2 - 2\,xy - 3 \qquad x(-1) = 0$$

$$y' = 4\,ty^2 + tx + 3 \qquad y(-1) = -1$$

Version 1030

Use technology to implement Euler's method with $h = 0.020$ to approximate $x(1.6)$ and $y(1.6)$ given the following system of IVPs.

$$x' = 4\,x^2y^2 + 4\,t^2x + 2 \qquad x(1) = -2$$

$$y' = 3\,tx^2 - 2\,t^2y \qquad y(1) = 2$$

Standard D3m

Version 1001

A rocket weighing 4800 kg is traveling at a constant 130 meters per second. Then when $t = 57600$, its thrusters are turned on, providing 90 Newtons of force until they are switched off 19200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 96000$.

Version 1002

A rocket weighing 2400 kg is traveling at a constant 20 meters per second. Then when $t = 43200$, its thrusters are turned on, providing 100 Newtons of force until they are switched off 7200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 57600$.

Version 1003

A rocket weighing 900 kg is traveling at a constant 140 meters per second. Then when $t = 12600$, its thrusters are turned on, providing 30 Newtons of force until they are switched off 2700 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 16200$.

Version 1004

A rocket weighing 2600 kg is traveling at a constant 100 meters per second. Then when $t = 7800$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 10400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 26000$.

Version 1005

A rocket weighing 4500 kg is traveling at a constant 180 meters per second. Then when $t = 31500$, its thrusters are turned on, providing 60 Newtons of force until they are switched off 18000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 54000$.

Version 1006

A rocket weighing 600 kg is traveling at a constant 70 meters per second. Then when $t = 1200$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 2400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 1800$.

Version 1007

A rocket weighing 4600 kg is traveling at a constant 190 meters per second. Then when $t = 0$, its thrusters are turned on, providing 10 Newtons of force until they are switched off 18400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 13800$.

Version 1008

A rocket weighing 1800 kg is traveling at a constant 80 meters per second. Then when $t = 21600$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 5400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 32400$.

Version 1009

A rocket weighing 4600 kg is traveling at a constant 80 meters per second. Then when $t = 64400$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 9200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 73600$.

Version 1010

A rocket weighing 2400 kg is traveling at a constant 30 meters per second. Then when $t = 38400$, its thrusters are turned on, providing 50 Newtons of force until they are switched off 9600 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 55200$.

Version 1011

A rocket weighing 4500 kg is traveling at a constant 70 meters per second. Then when $t = 22500$, its thrusters are turned on, providing 80 Newtons of force until they are switched off 18000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 45000$.

Version 1012

A rocket weighing 600 kg is traveling at a constant 40 meters per second. Then when $t = 10800$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 1200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 12000$.

Version 1013

A rocket weighing 3800 kg is traveling at a constant 120 meters per second. Then when $t = 41800$, its thrusters are turned on, providing 50 Newtons of force until they are switched off 15200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 45600$.

Version 1014

A rocket weighing 1200 kg is traveling at a constant 150 meters per second. Then when $t = 24000$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 4800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 32400$.

Version 1015

A rocket weighing 4800 kg is traveling at a constant 180 meters per second. Then when $t = 0$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 14400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 4800$.

Version 1016

A rocket weighing 200 kg is traveling at a constant 110 meters per second. Then when $t = 3600$, its thrusters are turned on, providing 10 Newtons of force until they are switched off 800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 5000$.

Version 1017

A rocket weighing 4500 kg is traveling at a constant 80 meters per second. Then when $t = 76500$, its thrusters are turned on, providing 60 Newtons of force until they are switched off 9000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 81000$.

Version 1018

A rocket weighing 4000 kg is traveling at a constant 120 meters per second. Then when $t = 32000$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 16000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 52000$.

Version 1019

A rocket weighing 4300 kg is traveling at a constant 120 meters per second. Then when $t = 77400$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 12900 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 94600$.

Version 1020

A rocket weighing 3200 kg is traveling at a constant 100 meters per second. Then when $t = 64000$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 12800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 83200$.

Version 1021

A rocket weighing 2000 kg is traveling at a constant 160 meters per second. Then when $t = 18000$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 8000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 30000$.

Version 1022

A rocket weighing 1300 kg is traveling at a constant 60 meters per second. Then when $t = 3900$, its thrusters are turned on, providing 80 Newtons of force until they are switched off 5200 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 11700$.

Version 1023

A rocket weighing 1100 kg is traveling at a constant 180 meters per second. Then when $t = 19800$, its thrusters are turned on, providing 40 Newtons of force until they are switched off 4400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 25300$.

Version 1024

A rocket weighing 600 kg is traveling at a constant 80 meters per second. Then when $t = 3600$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 1800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 4200$.

Version 1025

A rocket weighing 3600 kg is traveling at a constant 80 meters per second. Then when $t = 10800$, its thrusters are turned on, providing 60 Newtons of force until they are switched off 10800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 28800$.

Version 1026

A rocket weighing 1000 kg is traveling at a constant 200 meters per second. Then when $t = 0$, its thrusters are turned on, providing 100 Newtons of force until they are switched off 3000 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 2000$.

Version 1027

A rocket weighing 700 kg is traveling at a constant 170 meters per second. Then when $t = 14000$, its thrusters are turned on, providing 10 Newtons of force until they are switched off 2800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 18200$.

Version 1028

A rocket weighing 200 kg is traveling at a constant 50 meters per second. Then when $t = 2400$, its thrusters are turned on, providing 100 Newtons of force until they are switched off 400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 2600$.

Version 1029

A rocket weighing 3600 kg is traveling at a constant 50 meters per second. Then when $t = 28800$, its thrusters are turned on, providing 70 Newtons of force until they are switched off 10800 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 39600$.

Version 1030

A rocket weighing 4800 kg is traveling at a constant 180 meters per second. Then when $t = 81600$, its thrusters are turned on, providing 10 Newtons of force until they are switched off 14400 seconds later.

Give an IVP that models this scenario, then solve it. Use your solution to find the velocity of the rocket when $t = 110400$.

Standard D4m

Version 1001

A 4 kg mass is attached to a spring with constant 64 N/m. The mass is pulled outward 8 meters and released from rest. Then after 7 seconds, the mass is struck by a hammer, imparting 8 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 17$.

Version 1002

A 2 kg mass is attached to a spring with constant 18 N/m. The mass is pulled outward 5 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 8 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 18$.

Version 1003

A 4 kg mass is attached to a spring with constant 16 N/m. The mass is pulled outward 5 meters and released from rest. Then after 7 seconds, the mass is struck by a hammer, imparting 3 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 13$.

Version 1004

A 3 kg mass is attached to a spring with constant 27 N/m. The mass is pulled outward 8 meters and released from rest. Then after 2 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 11$.

Version 1005

A 5 kg mass is attached to a spring with constant 80 N/m. The mass is pulled outward 10 meters and released from rest. Then after 4 seconds, the mass is struck by a hammer, imparting 5 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1006

A 3 kg mass is attached to a spring with constant 12 N/m. The mass is pulled outward 9 meters and released from rest. Then after 2 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 3$.

Version 1007

A 5 kg mass is attached to a spring with constant 80 N/m. The mass is pulled outward 9 meters and released from rest. Then after 1 seconds, the mass is struck by a hammer, imparting 2 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 5$.

Version 1008

A 3 kg mass is attached to a spring with constant 27 N/m. The mass is pulled outward 7 meters and released from rest. Then after 7 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 16$.

Version 1009

A 3 kg mass is attached to a spring with constant 48 N/m. The mass is pulled outward 3 meters and released from rest. Then after 7 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1010

A 2 kg mass is attached to a spring with constant 18 N/m. The mass is pulled outward 7 meters and released from rest. Then after 8 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 16$.

Version 1011

A 3 kg mass is attached to a spring with constant 48 N/m. The mass is pulled outward 9 meters and released from rest. Then after 3 seconds, the mass is struck by a hammer, imparting 7 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1012

A 2 kg mass is attached to a spring with constant 8 N/m. The mass is pulled outward 1 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 13$.

Version 1013

A 4 kg mass is attached to a spring with constant 64 N/m. The mass is pulled outward 10 meters and released from rest. Then after 6 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 7$.

Version 1014

A 4 kg mass is attached to a spring with constant 16 N/m. The mass is pulled outward 9 meters and released from rest. Then after 10 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 19$.

Version 1015

A 5 kg mass is attached to a spring with constant 80 N/m. The mass is pulled outward 6 meters and released from rest. Then after 1 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 3$.

Version 1016

A 4 kg mass is attached to a spring with constant 16 N/m. The mass is pulled outward 7 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 2 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 18$.

Version 1017

A 3 kg mass is attached to a spring with constant 48 N/m. The mass is pulled outward 1 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1018

A 4 kg mass is attached to a spring with constant 64 N/m. The mass is pulled outward 10 meters and released from rest. Then after 4 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1019

A 4 kg mass is attached to a spring with constant 64 N/m. The mass is pulled outward 6 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 16$.

Version 1020

A 3 kg mass is attached to a spring with constant 27 N/m. The mass is pulled outward 10 meters and released from rest. Then after 10 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 17$.

Version 1021

A 5 kg mass is attached to a spring with constant 45 N/m. The mass is pulled outward 10 meters and released from rest. Then after 5 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 12$.

Version 1022

A 3 kg mass is attached to a spring with constant 12 N/m. The mass is pulled outward 9 meters and released from rest. Then after 2 seconds, the mass is struck by a hammer, imparting 7 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 10$.

Version 1023

A 5 kg mass is attached to a spring with constant 20 N/m. The mass is pulled outward 9 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 4 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 15$.

Version 1024

A 3 kg mass is attached to a spring with constant 12 N/m. The mass is pulled outward 6 meters and released from rest. Then after 4 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 5$.

Version 1025

A 3 kg mass is attached to a spring with constant 48 N/m. The mass is pulled outward 6 meters and released from rest. Then after 2 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 11$.

Version 1026

A 5 kg mass is attached to a spring with constant 20 N/m. The mass is pulled outward 4 meters and released from rest. Then after 1 seconds, the mass is struck by a hammer, imparting 8 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 3$.

Version 1027

A 5 kg mass is attached to a spring with constant 20 N/m. The mass is pulled outward 8 meters and released from rest. Then after 10 seconds, the mass is struck by a hammer, imparting 2 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 18$.

Version 1028

A 2 kg mass is attached to a spring with constant 8 N/m. The mass is pulled outward 1 meters and released from rest. Then after 7 seconds, the mass is struck by a hammer, imparting 8 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 9$.

Version 1029

A 2 kg mass is attached to a spring with constant 32 N/m. The mass is pulled outward 6 meters and released from rest. Then after 4 seconds, the mass is struck by a hammer, imparting 6 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 9$.

Version 1030

A 5 kg mass is attached to a spring with constant 80 N/m. The mass is pulled outward 6 meters and released from rest. Then after 9 seconds, the mass is struck by a hammer, imparting 2 Newtons of inward impulse.

Give an IVP that models this scenario, then solve it. Use your solution to find the position of the mass when $t = 18$.