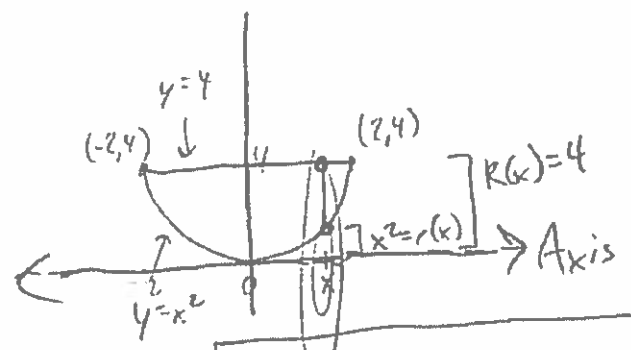


7

What integral is produced by the washer method for the volume of the solid of revolution obtained by rotating the region bounded by $y=x^2$ and $y=4$ around the x -axis?



$$V = \pi \int_{-2}^2 ((4)^2 - (x^2)^2) dx$$

$$= \pi \int_{-2}^2 (16 - x^4) dx$$

$$= \pi \left[16x - \frac{1}{5}x^5 \right]_{-2}^2$$

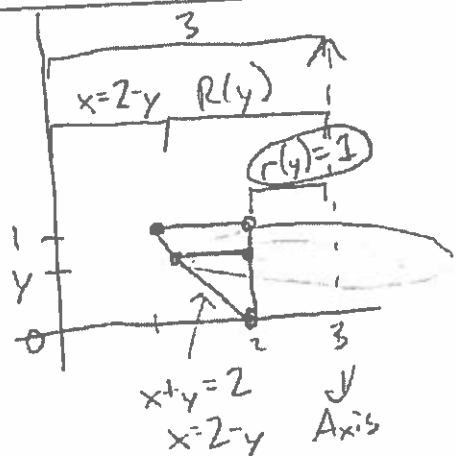
$$= \pi \left[\left(32 - \frac{32}{5} \right) - \left(-32 + \frac{32}{5} \right) \right]$$

$$= \pi \frac{160 - 32 + 160 - 32}{5}$$

$$= \frac{256\pi}{5}$$

1 11
3 20
- 64
156

8) What integral is produced by the washer method for the volume of the solid of revolution obtained by rotating the triangle with vertices $(1,1)$, $(2,1)$, $(2,0)$ around the axis $x=3$?



$$3 = (2-y) + R(y)$$

$$R(y) = 1+y$$

$$V = \pi \int_0^1 ((1+y)^2 - (1)^2) dy$$

$$= \pi \int_0^1 (1 + 2y + y^2 - 1) dy$$

$$= \pi \left[y^2 + \frac{1}{3} y^3 \right]_0^1$$

$$= \pi \left[\left(1 + \frac{1}{3}\right) - (0+0) \right] = \frac{4}{3} \pi$$