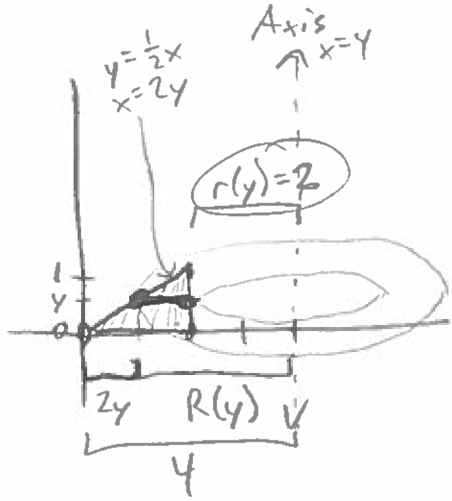
(4) Find the volume of the solid of revolution obtained by rotating the triangle with vertices $(0,0)$, $(2,0)$, $(2,1)$ around the axis $x=4$.



$R(y)+2y=4$

$R(y)=4-2y$

$$V=\pi\int_0^1\left[(4-2y)^2-(2)^2\right]dy$$

$$=\pi\int_0^1\left[16-16y+4y^2-4\right]dy$$

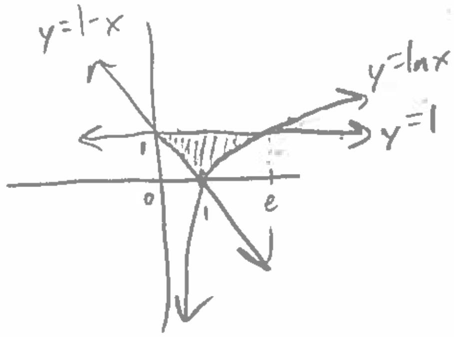
$$=\pi\int_0^1\left[12-16y+4y^2\right]dy$$

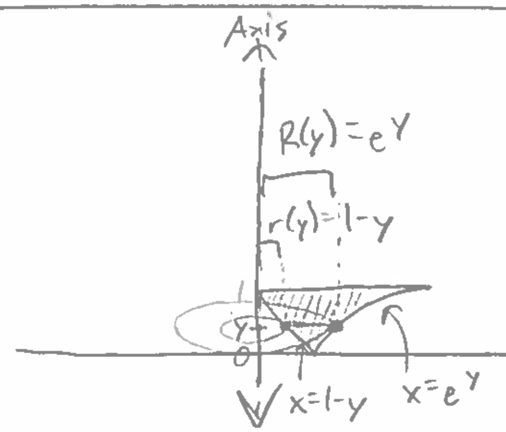
$$=\pi\left[12y-8y^2+\frac{4}{3}y^3\right]_0^1$$

$$=\pi\left[\left(12-8+\frac{4}{3}\right)\cancel{-(0)}\right]$$

$$=\boxed{\frac{16\pi}{3}}$$

⑤ Find the volume of the solid of revolution obtained by rotating the region bounded by $x+y=1$, $y=\ln x$, $y=1$ around the y-axis.





$$V = \pi \int_0^1 \left(\left[e^y\right]^2 - \left[1-y\right]^2 \right) dy$$

$$= \pi \int_0^1 \left(e^{2y} - \left(1 - 2y + y^2\right) \right) dy$$

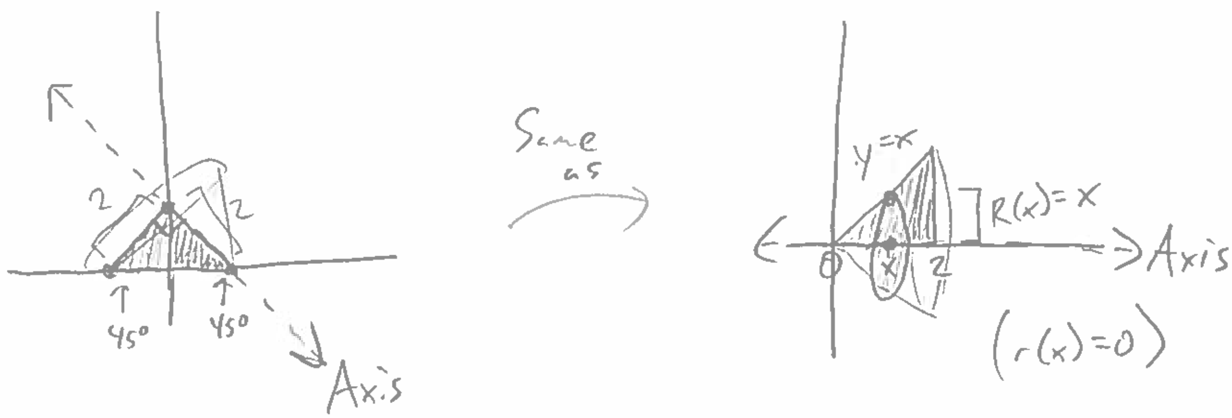
$$= \pi \int_0^1 \left(e^{2y} - 1 + 2y - y^2 \right) dy$$

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

$$= \pi \left[\left(\frac{1}{2} e^2 \cancel{- 1 + 1} - \frac{1}{3} \right) - \left(\frac{1}{2} \cancel{e^0} \cancel{- 0 + 0 - 0} \right) \right]$$

$$= \boxed{\frac{1}{2} \pi e^2 - \frac{5}{6} \pi}$$

(6) Find the volume of the solid of revolution obtained by rotating the triangle with vertices $(-\sqrt{2},0)$, $(0,\sqrt{2})$, $(\sqrt{2},0)$ around the axis $y=\sqrt{2}-x$.



$$V = \pi \int_0^2 \left[(x)^2 - (0)^2\right] dx$$

$$= \pi \int_0^2 x^2 dx$$

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

$$= \boxed{\frac{8}{3}\pi}$$

(or use $V = \frac{1}{3}\pi r^3$ formula for cone volume)