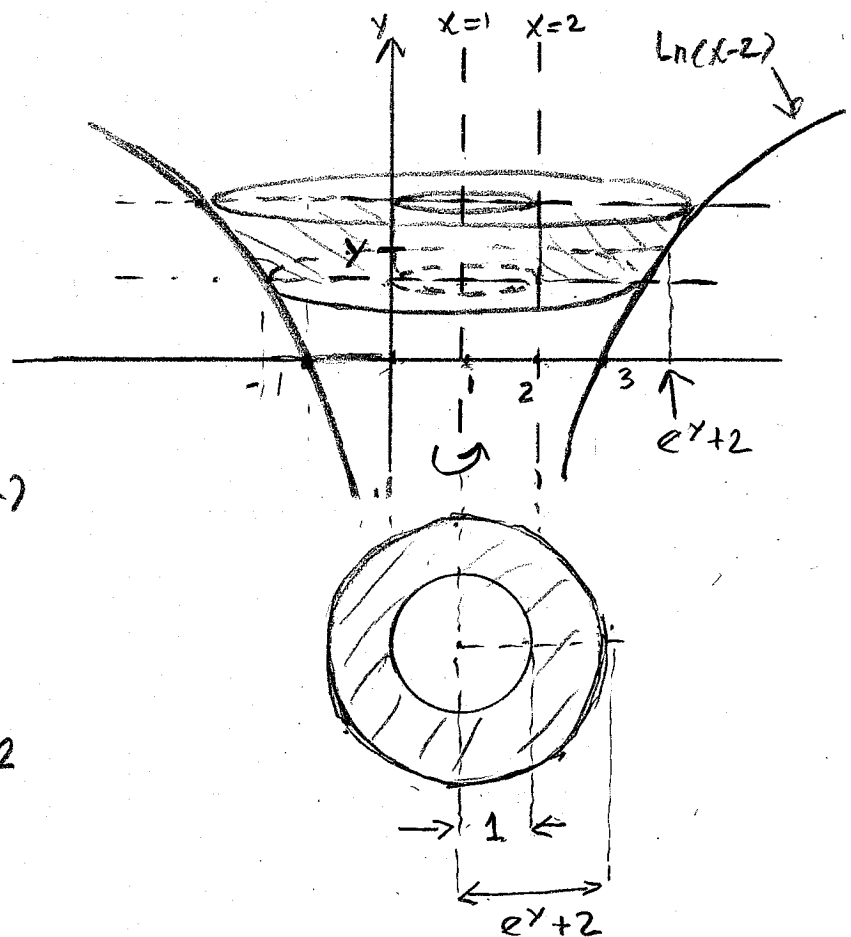
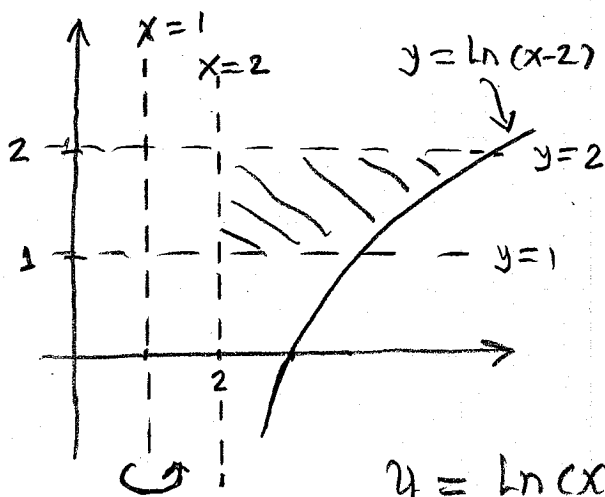


METHOD OF WASHERS. INTEGRATING ON Y

Example Find the volume of the solid generated when the region enclosed by $y = \ln(x-2)$, $y=1$, $y=2$ and $x=2$ is revolved around $x=1$.



$$\log_2 8 = 3$$

$$y = \ln(x-2)$$

$$x-2 = e^y$$

$$x = e^y + 2$$

$$\begin{aligned} A(y) &= \pi (e^y + 2)^2 - \pi \cdot 1^2 \\ &= \pi (e^y + 2)^2 - \pi \end{aligned}$$

$$\begin{aligned} V &= \int_1^2 A(y) dy = \pi \int_1^2 (e^{2y} + 4e^y + 4 - 1) dy \\ &= \pi \left(\frac{e^{2y}}{2} + 4e^y + 3y \right) \Big|_1^2 \end{aligned}$$