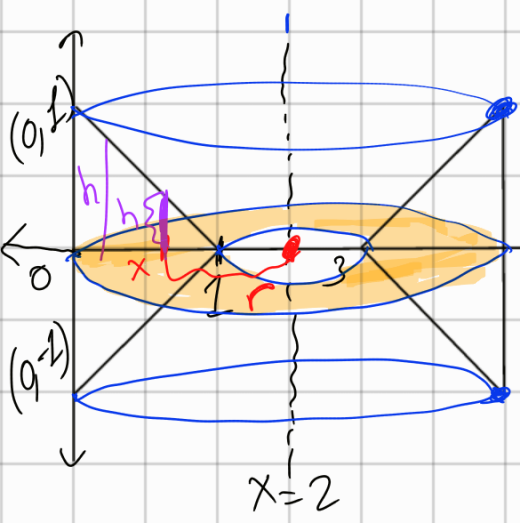


4) Corrected version:



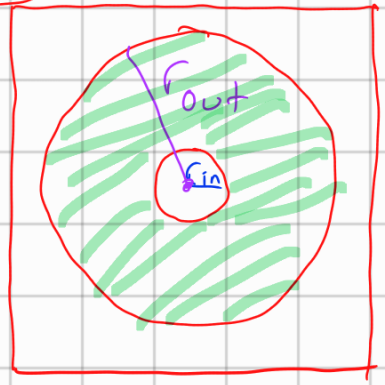
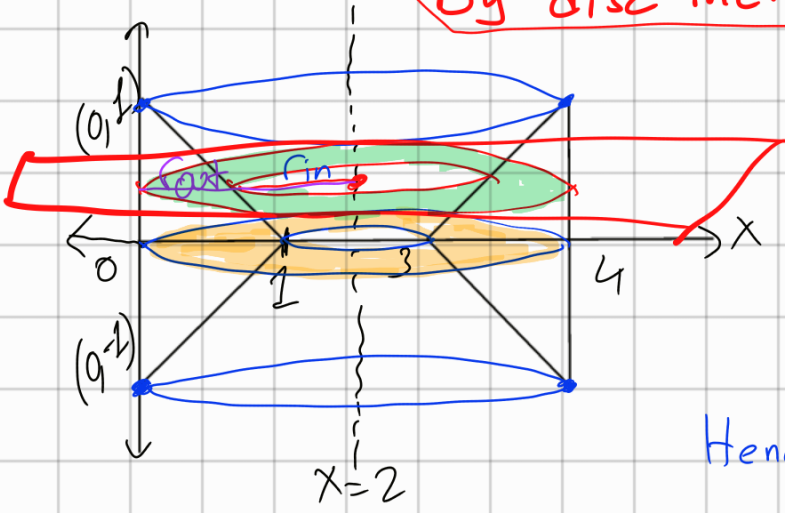
The line passing through $(0,1)$ and $(1,0)$ is $y = -x + 1$.

By cylindrical shell method,
radius = $r = 2 - x$, height = $-x + 1$, $0 \leq x \leq 1$

Hence,

$$\text{Volume} = 2 \cdot \int_0^1 2\pi (2-x)(-x+1) dx = \frac{10\pi}{3}$$
 Symmetry

By disc method



$r_{out} = 2$
 $r_{in} = 2 - x$
 where $x = -y + 1$

Hence, $r_{in} = 2 - (-y + 1) = 1 + y$

Area func. wrt. variable $y \Rightarrow A(y) = \pi [2^2 - (1+y)^2]$, $0 \leq y \leq 1$

Volume = $2 \cdot \int_0^1 \pi [4 - (1+y)^2] dy = 2\pi \int_0^1 [3 - 2y - y^2] dy = 2\pi \frac{5}{3} = \frac{10\pi}{3}$
 Symmetry