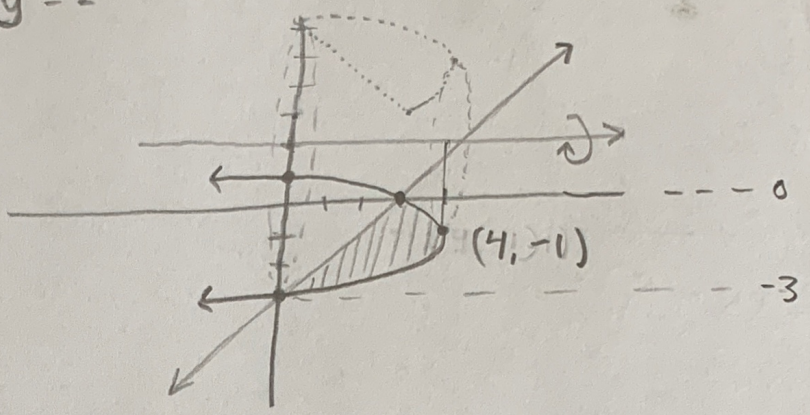
§6.2-6.3 Quiz

ZED CHANCE

Find Volume: about $y=2$



$y = x - 3$

$x = -y^2 - 2y + 3$

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

$= -(y+3)(y-1)$

$y = -3, 1$

Vertex

$\frac{-b}{2a} = \frac{2}{-2} = -1$

$f(-1) = -(-1)^2 - 2(-1) + 3$

$= -1 + 2 + 3$

$= 4$

$(4, -1)$

POI

$-y^2 - 2y + 3 = y + 3$

$-y^2 - 3y = 0$

$-y(y+3) = 0$

$y = 0, -3$

Volume

$V = 2\pi \int_{-3}^{0} (2-y)(y+3)\,dy$

$= 2\pi \int_{-3}^{0} 2y + 6 - y^2 - 3y\,dy$

$= 2\pi \int_{-3}^{0} -y^2 - y + 6\,dy$

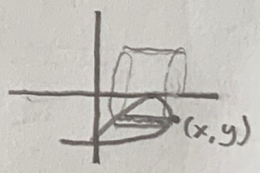
$= 2\pi \left[-\frac{1}{3}y^3 - \frac{1}{2}y^2 + 6y \right]_{-3}^{0}$

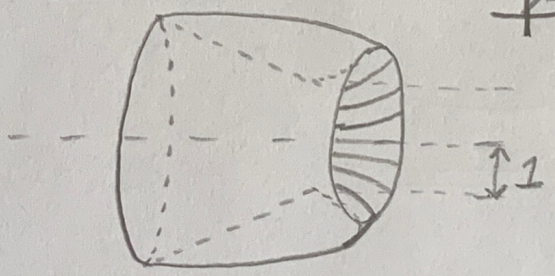
$= 2\pi \left[0 - 0 + 0 - \left(9 - \frac{9}{2} - 18\right) \right]$

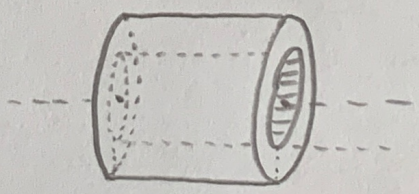
$= 2\pi \left[-9 + \frac{9}{2} + 18 \right]$

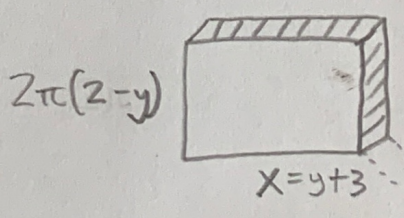
$= 2\pi \left[\frac{27}{2} \right]$ $\boxed{= 27\pi}$

Shells









$V_{SLAB} = 2\pi(2-y)(y+3)\,dy$