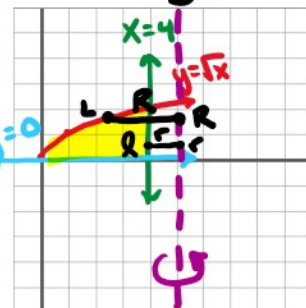
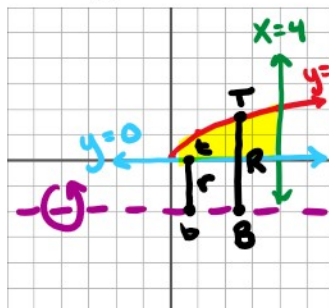
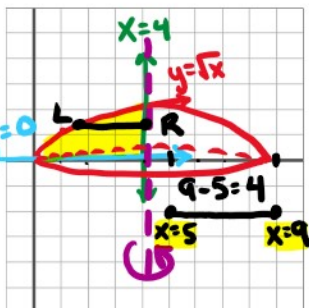
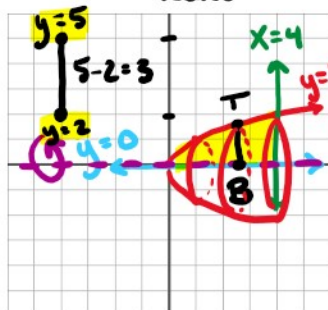


DISK METHOD

$$V = \pi \int_L^R (\underbrace{T-B}_{\text{radius}})^2 dx \quad V = \pi \int_B^T (\underbrace{R-L}_{\text{radius}})^2 dy$$

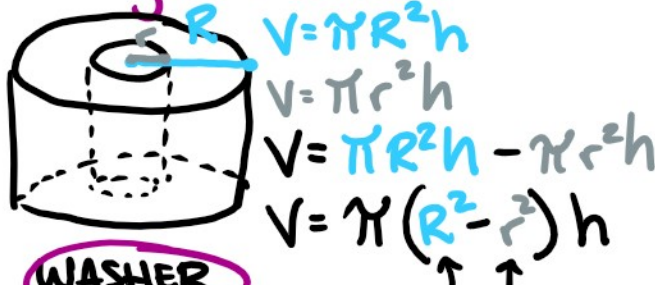
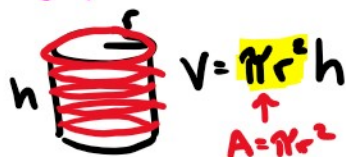


A.R. is x-axis

A.R. is x=4

A.R. is y=-2

A.R. is x=5



DISK vs. WASHER

because A.R. is not a border

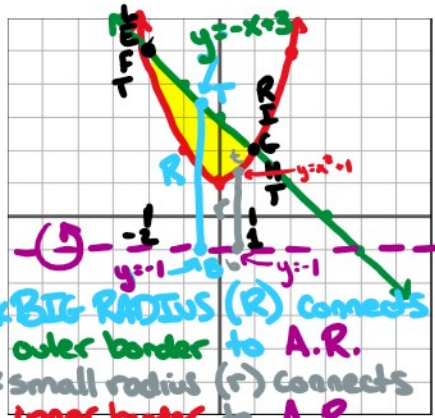
dx vs. dy

because A.R. is horizontal

$$V = \pi \int_L^R [R^2 - r^2] dx$$

$$V = \pi \int_{-2}^1 [(-x+3-(-1))^2 - (x^2+1-(-1))^2] dx$$

$$V = \pi \int_{-2}^1 [(-x+4)^2 - (x^2+2)^2] dx = \boxed{101.79}$$



*BIG RADIUS (R) connects outer border to A.R.
*small radius (r) connects inner border to A.R.

$y = x^2 + 1$ $y = -x + 3$
A.R. is $y = -1$