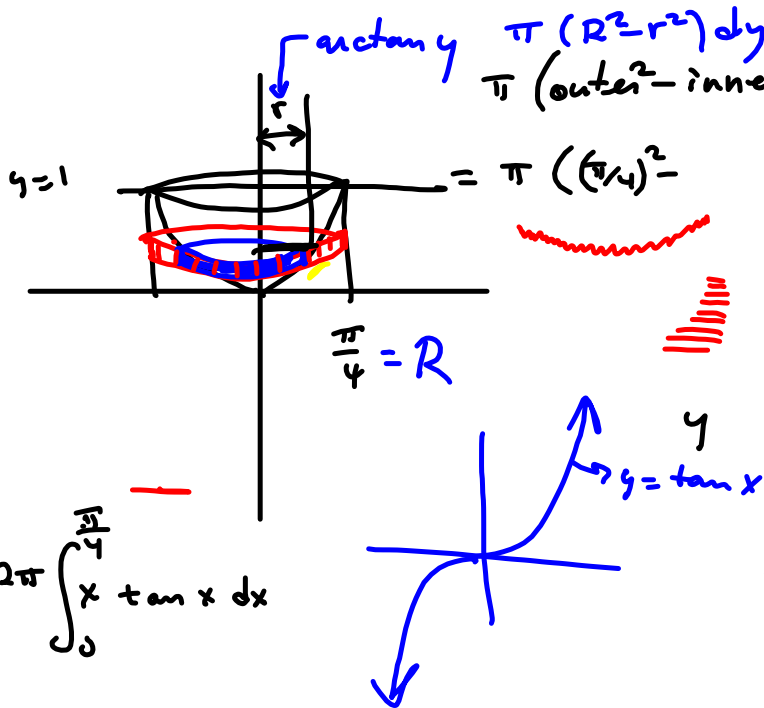


SS.2 #31b (Technology) This ain't #31b

$y = \tan x$ ,  $y = 0$ ,  $x = \frac{\pi}{4}$ , about y-axis.  $\rightarrow$  about  $y = -1$

Find volume of solid of revolution



$$\pi (R^2 - r^2) dy$$

$$\pi (\text{outer}^2 - \text{inner}^2) \Delta y$$

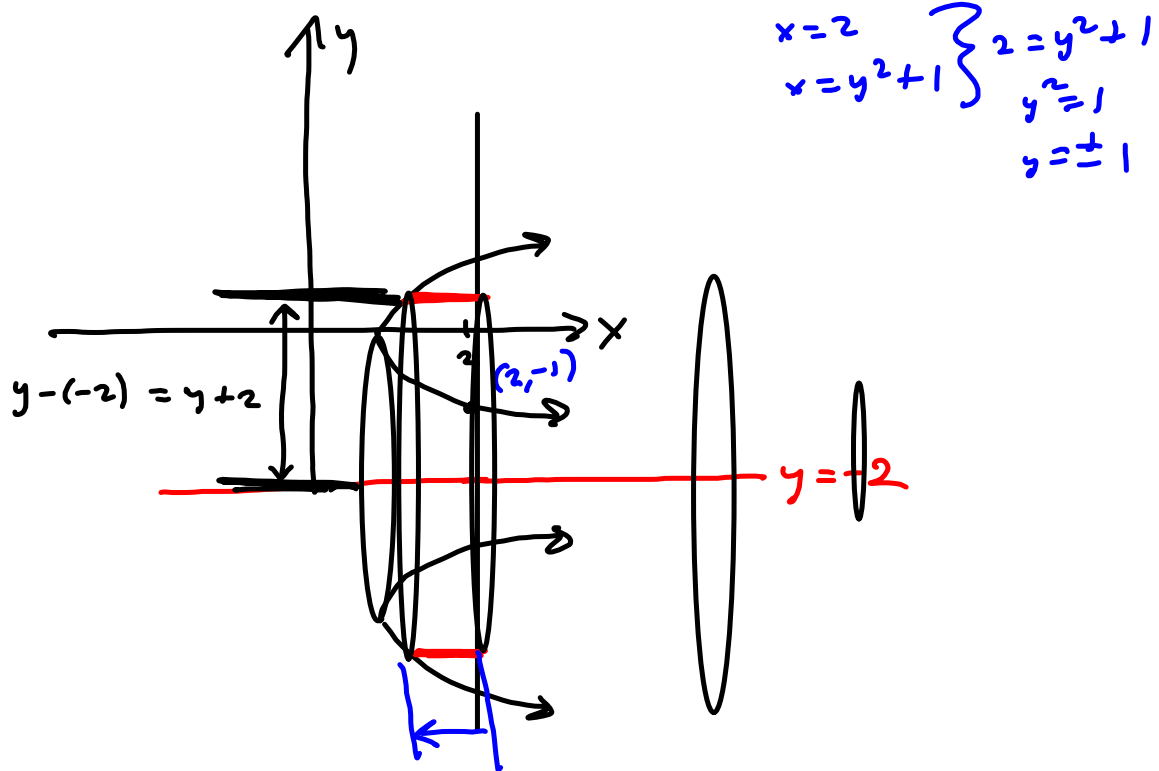
$$= \pi \left(\frac{\pi}{4}\right)^2$$

Find  $r$ :  
 $y = \tan x$   
 $\arctan y = x$

$$2\pi \int_0^{\pi/2} x \tan x \, dx$$

$$\pi \int_0^1 \left(\left(\frac{\pi}{4}\right)^2 - \arctan(y)^2\right) dy$$

§5.3 #20  $x = y^2 + 1$ ,  $x = 2$ , about  $y = -2$



$2 - x = 2 - (y^2 + 1) = 1 - y^2 = \text{height of cylinders}$   
 $y + 2 = \text{radius of cylinder}$

$$\int_{-1}^1 2\pi (y+2)(1-y^2) dy$$

$$2 \tan x$$