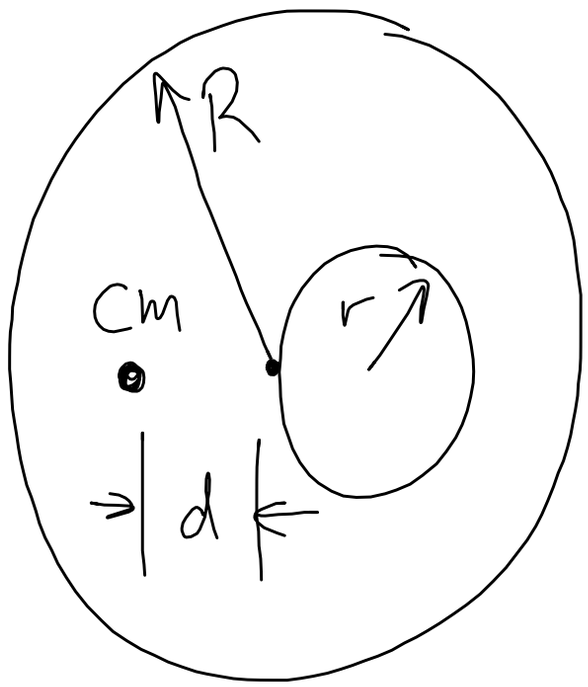
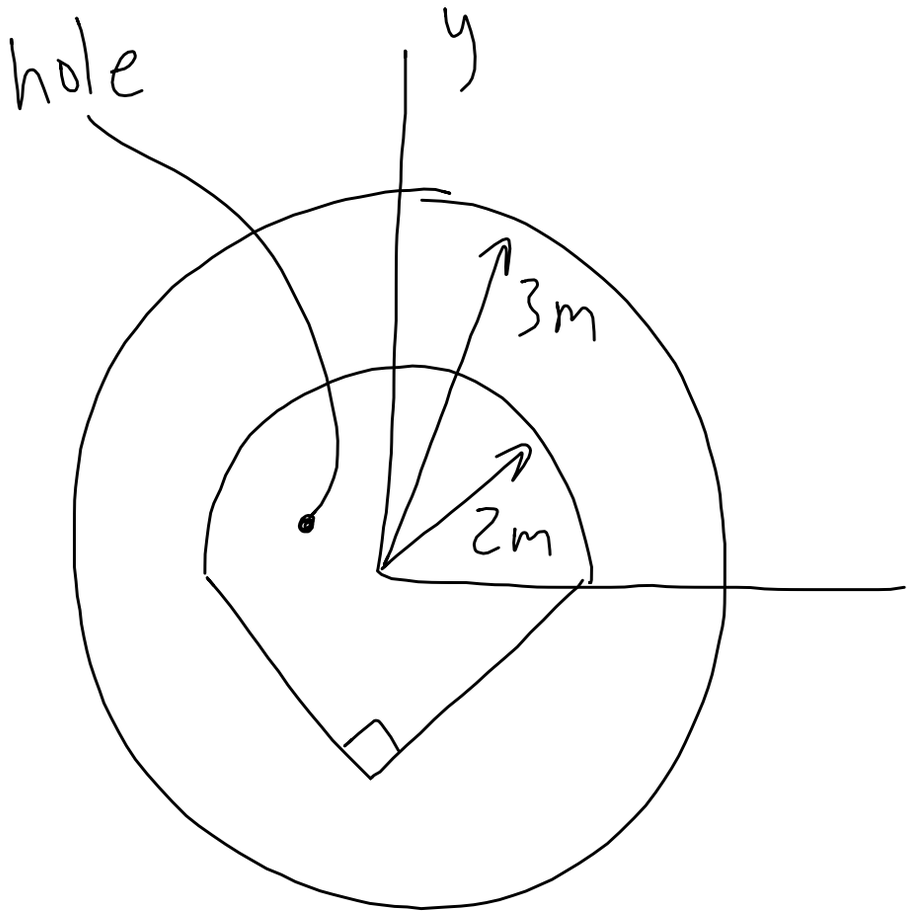


What is d? (Measure x from center of orig disk

$$X_c = \frac{\sum X_i A_i}{\sum A_i}$$

$$-d = \frac{0(\pi R^2) + r(-\pi r^2)}{\pi R^2 - \pi r^2}$$

$$= -\frac{r^3}{R^2 - r^2}$$



By inspection, $X_c = 0$

Shape	y_c	Area
circle	0	9π
½ circle	$\frac{4(2)}{3\pi}$	$-\frac{\pi(2)^2}{2}$
triangle	$-\frac{2}{3}$	-4

$$y_c = \frac{0(9\pi) + \frac{8}{3\pi}(-2\pi) + \left(-\frac{2}{3}\right)(-4)}{9\pi - 2\pi - 4} = -.148\,m$$

Aside about hydrostatic forces

$$p(x,y) \Rightarrow \frac{N}{m^2} \text{ or } Pa \quad (\text{or } psi)$$

$$\text{Total force} = \int p(x,y)\, dA = F_R$$

Volume under the $p(x,y)$ surface

Where does F_R go? @ centroid of volume under $p(x,y)$