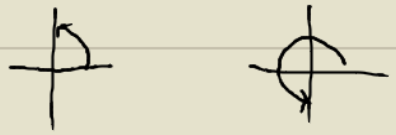
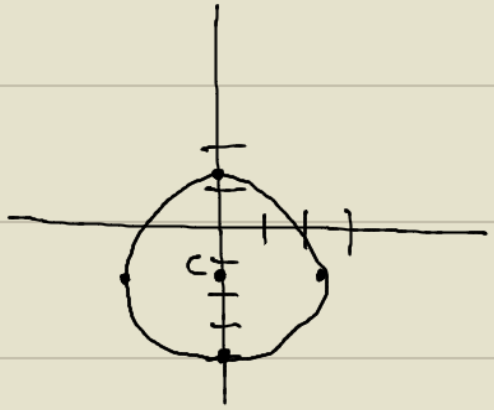
ex: $r = \dfrac{4}{2 + \sin\theta}$



$r = \dfrac{2}{1 + \frac{1}{2}\sin\theta}$ $\quad e = \frac{1}{2}$

ELLIPSE



$\theta = \frac{\pi}{2}$

$r = \dfrac{4}{2 + \sin\frac{\pi}{2}}$

$r = \frac{4}{3}$

$\theta = \frac{3\pi}{2}$

$r = \dfrac{4}{2 + \sin\frac{3\pi}{2}}$

$r = 4$

$\text{CENTER} = \dfrac{\frac{4}{3} - 4}{2} = \dfrac{4 - 12}{6} = \dfrac{-8}{6} = -\dfrac{4}{3}$

$a = \dfrac{\frac{4}{3} + 4}{2} = \dfrac{4 + 12}{6} = \dfrac{16}{6} = \dfrac{8}{3}$

$c = ea = \frac{1}{2}\left(\frac{8}{3}\right) = \frac{4}{3}$

$b = \sqrt{a^2 - c^2} = \sqrt{\left(\frac{8}{3}\right)^2 - \left(\frac{4}{3}\right)^2} = \sqrt{\frac{64}{9} - \frac{16}{9}} = \sqrt{\frac{48}{9}} = 2.3$