

$$6. \quad r = \frac{a}{a - \cos \theta}$$

$$= \frac{1}{1 - \frac{1}{3} \cos \theta} \quad e = \frac{1}{3}$$

ELLIPSE



$$\theta = 0$$

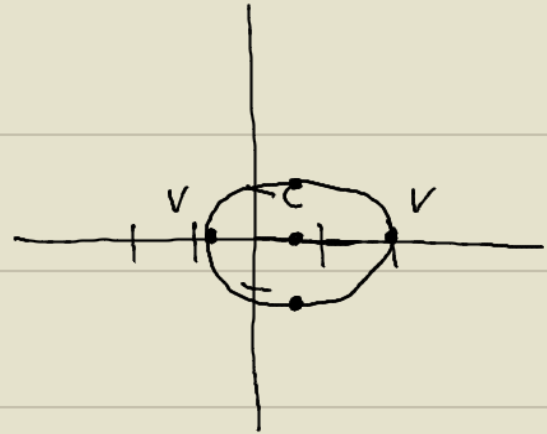
$$r = \frac{a}{a - \cos 0}$$

$$r = a$$

$$\theta = \pi$$

$$r = \frac{a}{a - \cos \pi}$$

$$r = \frac{2}{3}$$



$$\text{CENTER} = \frac{-\frac{a}{3} + a}{2} = \frac{-a + 3a}{6} = \frac{2a}{6} = \frac{a}{3}$$

$$a = \frac{\frac{a}{3} + a}{2} = \frac{a + 3a}{6} = \frac{4a}{6} = \frac{2a}{3}$$

$$c = ea = \frac{1}{3} \left( \frac{2a}{3} \right) = \frac{2a}{9}$$

$$b = \sqrt{a^2 - c^2} = \sqrt{\left(\frac{2a}{3}\right)^2 - \left(\frac{2a}{9}\right)^2} = \sqrt{\frac{4a^2}{9} - \frac{4a^2}{81}} = \sqrt{\frac{36a^2 - 4a^2}{81}} = \sqrt{\frac{32a^2}{81}} = \frac{\sqrt{32}a}{9} = \frac{4\sqrt{2}a}{9}$$