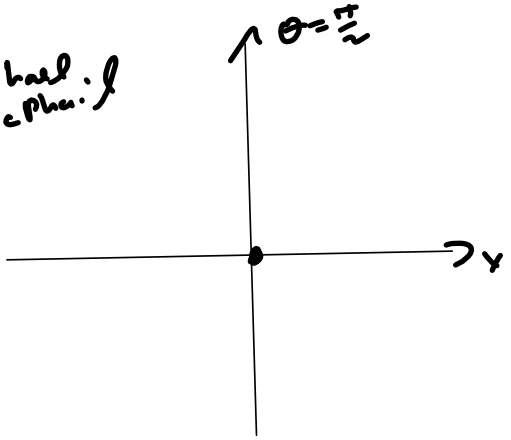


michael macphail

$$r = \frac{ep}{1 \pm e\sin\theta}$$

Horizontal Directrix

"+" above the pole

"−" below the pole

$$r = \frac{ep}{1 \pm e\cos\theta}$$

Vertical Directrix

"+" right of the pole

"−" left of the pole

$$r = \frac{25}{10 + 5\sin\theta} = \frac{\frac{25}{10}}{10\left(1 + \frac{1}{2}\sin\theta\right)}$$

$$= \frac{\frac{25}{10}}{1 + \frac{1}{2}\sin\theta}$$

$$= \frac{\frac{5}{2}}{1 + \frac{1}{2}\sin\theta}$$

$\frac{5}{2} = ep$

$p = 1 \Rightarrow$ parabola

$p < 1 \Rightarrow$ ellipse

$p > 1 \Rightarrow$ hyperbola

hyperbola :

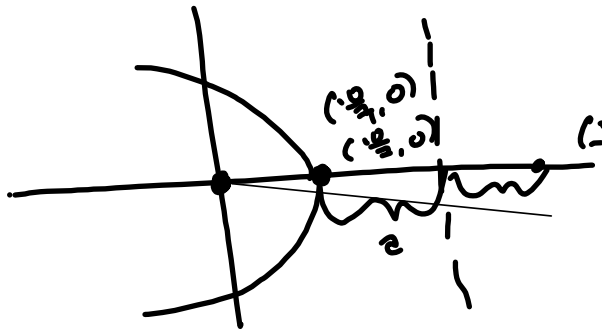
$$r = \frac{20}{4 + 10\cos\theta}$$

↑ to the right

↑ vertical direct.

$$e = \frac{5}{2}$$

$$r = \frac{5}{1 + \frac{10}{4}\cos\theta} = \frac{\frac{5}{2}}{1 + \frac{5}{2}\cos\theta}$$



$(-\frac{10}{3}, \pi) = (0, \frac{10}{3})$

$2a = \frac{10}{3} - \frac{10}{7}$

$a = \frac{70-30}{21} = \frac{40}{21}$