

Circle

$$(x-h)^2 + (y-k)^2 = r^2$$

Center: (h, k) r : radius

$$ax^2 + ay^2 + \dots$$

Parametric

$$x = h + r \cos t$$

$$y = k + r \sin t$$

Ellipses

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$$

Center: (h, k)

* Major axis \rightarrow Big (Foci)

Minor axis \rightarrow Small



$$F = \sqrt{\text{maj}^2 - \text{min}^2}$$

$$x = h + a \cos t$$

$$y = k + b \sin t$$

Hyperbola

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$

Center: (h, k)

* Transverse axis \rightarrow + (Foci) } sec
Vertices

Conjugate axis \rightarrow - tan

Slope of asymptote: $\pm \frac{b}{a}$

$$* F = \sqrt{a^2 + b^2}$$

$$x = h + a \sec t$$

$$y = k + b \tan t$$

Parabola

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$$(x-h)^2 = 4p(y-k)$$

↓
up/down

Vertex: (h, k)

F: p

directrix: p

Focal width: $4p$

$$(y-k)^2 = 4p(x-h)$$

↓
right/left