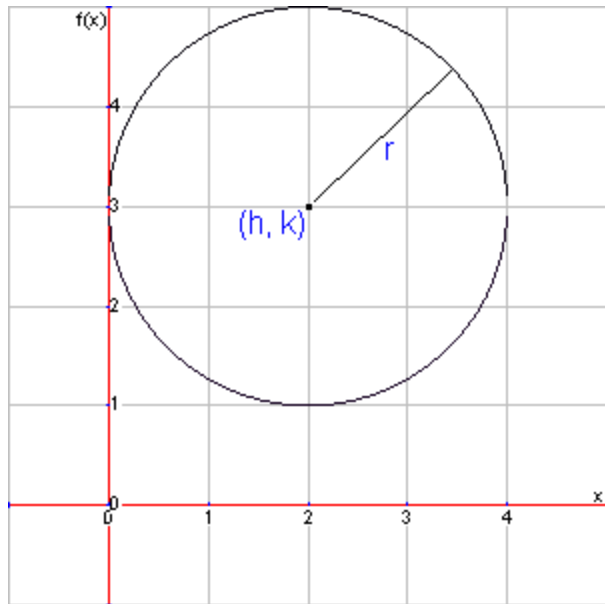


## Circles

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

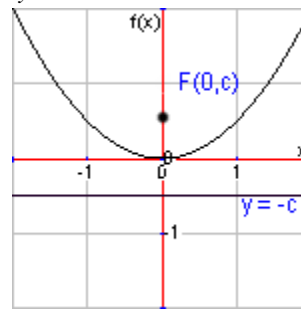


## Parabolas

$$|a| = \frac{1}{4c}$$

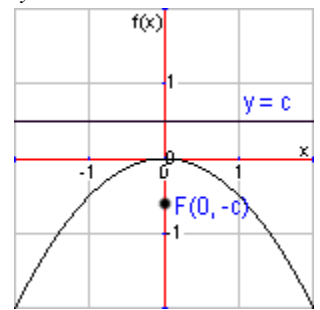
$a > 0$  with focus  $(0, c)$

$$y = ax^2 \quad \text{or} \quad x^2 = 4cy$$



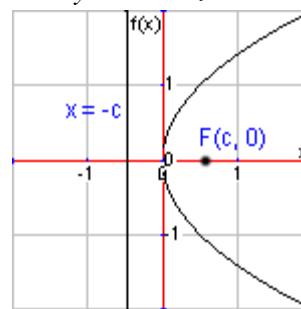
$a < 0$  with focus  $(0, -c)$

$$y = ax^2 \quad \text{or} \quad x^2 = 4cy$$



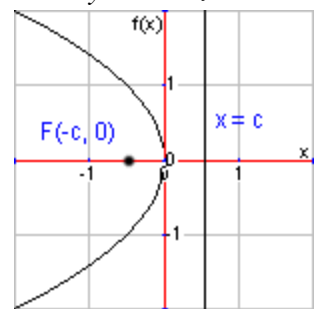
$a > 0$  with focus  $(c, 0)$

$$x = ay^2 \quad \text{or} \quad y^2 = 4cx$$



$a < 0$  with focus  $(-c, 0)$

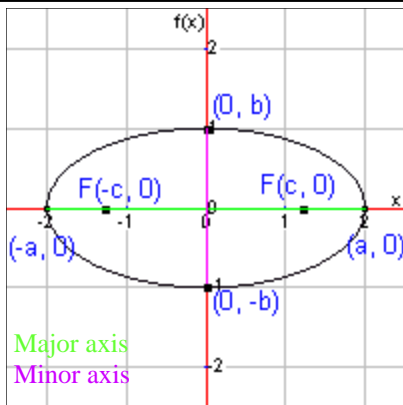
$$x = ay^2 \quad \text{or} \quad y^2 = 4cx$$



# Conic Section Review Sheet

## Ellipses

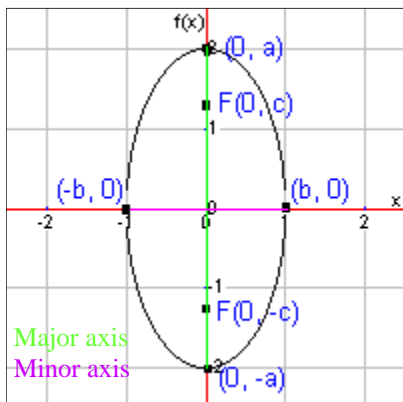
$$a > b > 0$$



$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$$c^2 = a^2 - b^2$$

vertices:  $(\pm a, 0)$   
co-vertices:  $(0, \pm b)$   
foci:  $(\pm c, 0)$



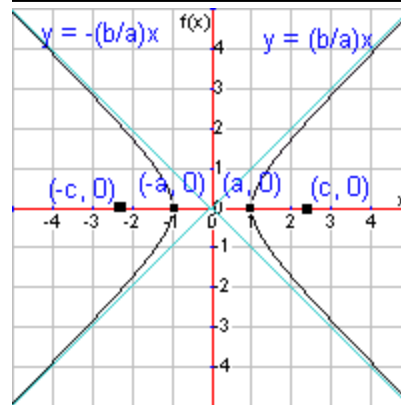
$$\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$$

$$c^2 = a^2 - b^2$$

vertices:  $(0, \pm a)$   
co-vertices:  $(\pm b, 0)$   
foci:  $(0, \pm c)$

## Hyperbolas

$$|a| = \frac{1}{4c}$$

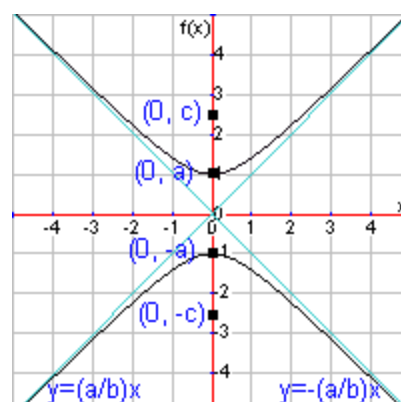


$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

$$c^2 = a^2 + b^2$$

vertices:  $(\pm a, 0)$   
foci:  $(\pm c, 0)$   
x-intercepts:  $(\pm a, 0)$

$$y = \pm \frac{b}{a}x$$



$$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$

$$c^2 = a^2 - b^2$$

vertices:  $(0, \pm a)$   
foci:  $(0, \pm c)$   
y-intercepts:  $(0, \pm a)$

$$y = \pm \frac{a}{b}x$$