Name: _____

Writing Equations and Graphing Conic Sections

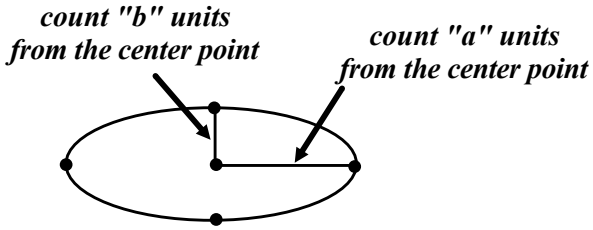
Ellipses

When *x* wins, the equation looks like:

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

Plug in the given information and simplify the denominators.

The graph looks like:

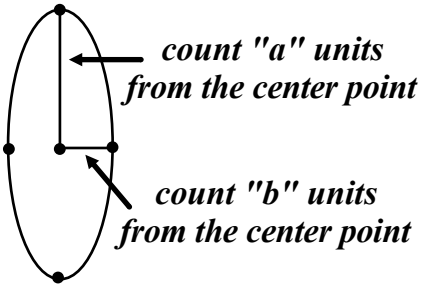


When *y* wins, the equation looks like:

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

Plug in the given information & simplify the denominators

The graph looks like:



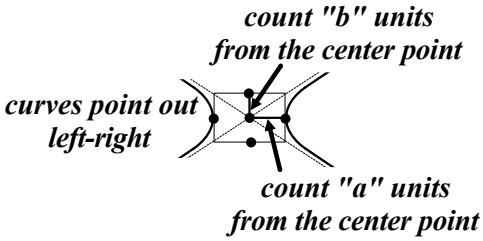
Hyperbolas

When *x* wins, the equation looks like:

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

Plug in the given information and simplify the denominators.

The graph looks like:

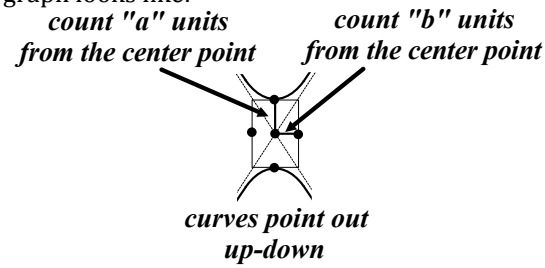


When *y* wins, the equation looks like:

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

Plug in the given information & simplify the denominators

The graph looks like:



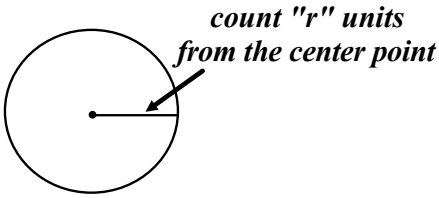
Circles

The equation looks like:

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

Plug in the given information & simplify the radius.

The graph looks like:



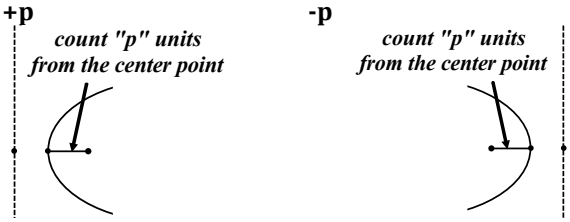
Parabola

When *x* wins, the equation looks like:

$$(x-h)=\frac{1}{4p}(y-k)^2$$

Plug in the given information & simplify the denominator.

The graph looks like:

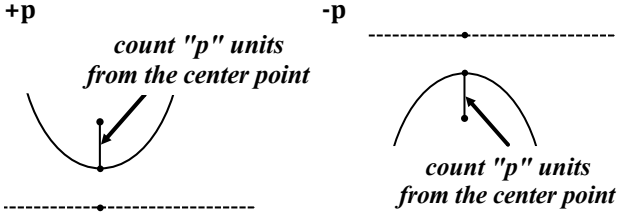


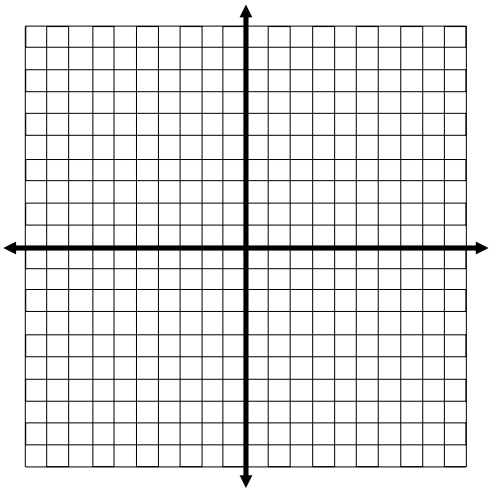
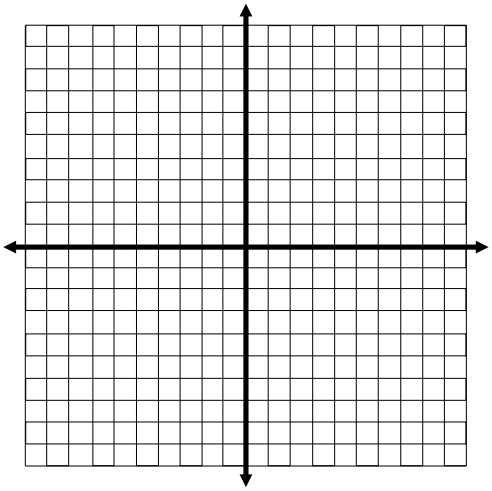
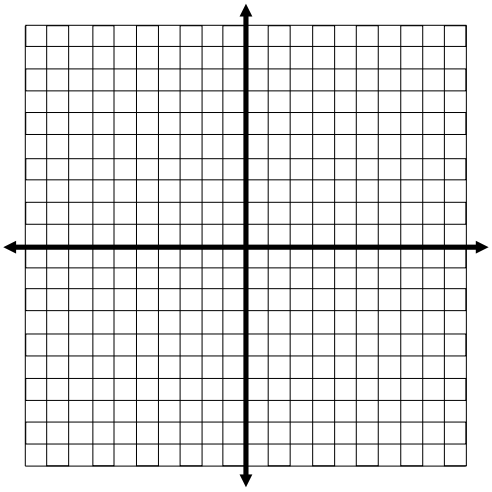
When *y* wins, the equation looks like:

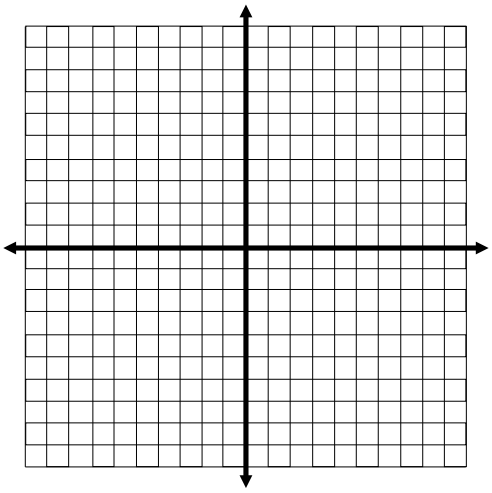
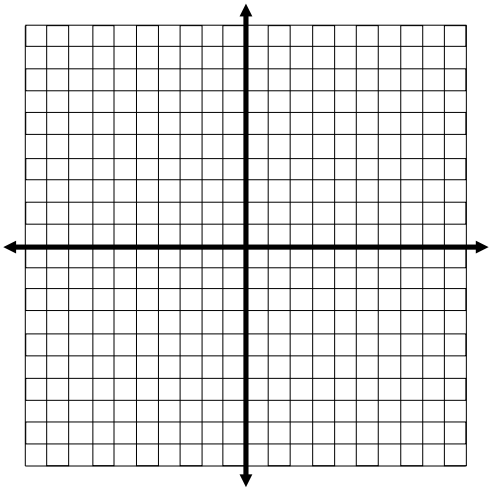
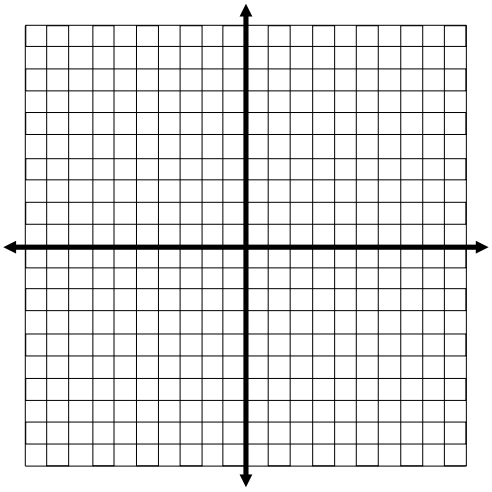
$$(y-k)=\frac{1}{4p}(x-h)^2$$

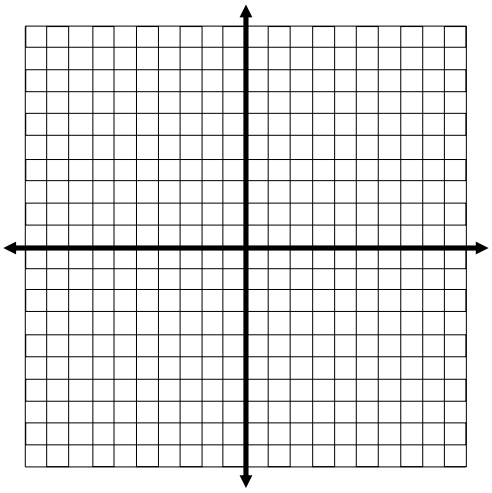
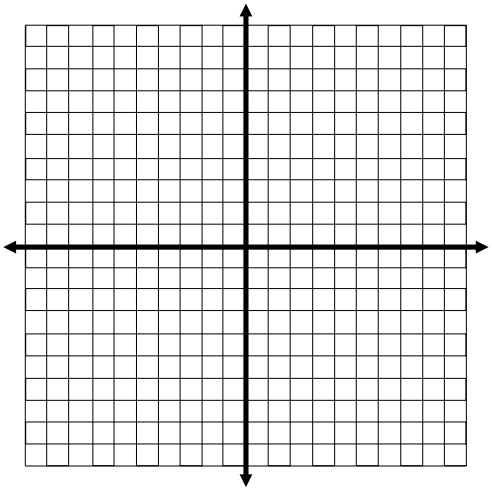
Plug in the given information & simplify the denominator.

The graph looks like:



Write the Equation	Given Information	Graph the Conic
1a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	1. *On the ellipse, x wins.* $(h,k) = (3,2)$ $a = 4 \quad b = 1$	1b. 
2a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	2. *On the hyperbola, y wins.* $(h,k) = (-1,4)$ $a = 3 \quad b = 5$	2b. 
3a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	3. *On the parabola, y wins, and the graph is negative* $(h,k) = (4,1)$ $p = 2$	3b. 

Write the Equation	Given Information	Graph the Conic
4a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	4. *The conic is a circle.* $(h, k) = (-3, 2)$ $r = 3$	4b. 
5a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	5. *On the hyperbola, x wins.* $(h, k) = (2, 2)$ $a = 4 \quad b = 1$	5b. 
6a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	6. *On the ellipse, y wins.* $(h, k) = (1, 3)$ $a = 5 \quad b = 2$	6b. 

Write the Equation	Given Information	Graph the Conic
7a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	7. *On the parabola, x wins, and the graph is negative.* $(h, k) = (5, 1)$ $p = 1$	7b. 
8a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	8. *On the hyperbola, x wins, and the graph is positive.* $(h, k) = (0, 4)$ $a = 2 \quad b = 2$	8b. 
9a. The equation *before plugging them in:* The equation of the conic with the information shown to the right:	9. *On the parabola, x wins, and the graph is positive* $(h, k) = (4, 3)$ $p = 2$	9b.