The Ellipse

Standard Form of a Ellipse (a>b)

$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$	$\frac{(x-h)^2}{b^2}+\frac{(y-k)^2}{a^2}=1$
$c=\sqrt{a^2-b^2}$	$c=\sqrt{a^2-b^2}$
$Center:(h,k)$	$Center:(h,k)$
Major Axis : Parallel to x - axis	Major Axis : Parallel to y - axis
Length of Major Axis : 2a	Length of Major Axis : 2a
Length of Minor Axis : 2b	Length of Minor Axis : 2b
$Foci:(h+c,k),\ (h-c,k)$	$Foci:(h,k+c),\ (h,k-c)$
$Vertices:(h+a,k),\ (h-a,k)$	$Vertices:(h,k+a),\ (h,k-a)$

1. Graph
(Similar to p.395 #13-16)

$$\frac{x^2}{9}+\frac{y^2}{16}=1$$

2. Graph
(Similar to p.395 #13-16)

$$\frac{x^2}{9}+y^2=1$$

3. Find the vertices and foci of each ellipse. Graph each equation
(Similar to p.396 #17-26)

$$\frac{x^2}{36}+\frac{y^2}{4}=1$$

4. Find the vertices and foci of each ellipse. Graph each equation
(Similar to p.396 #17-26)

$$x^2+15y^2=45$$

5. Find the vertices and foci of each ellipse. Graph each equation
(Similar to p.396 #17-26)

$$3y^2 + 12x^2 = 12$$

6. Find an equation for each ellipse. Graph the equation
(Similar to p.396 #27-38)

$$Center: (0,0)$$
$$Focus: \left(-\sqrt{13},0\right)$$
$$Vertex: (7,0)$$

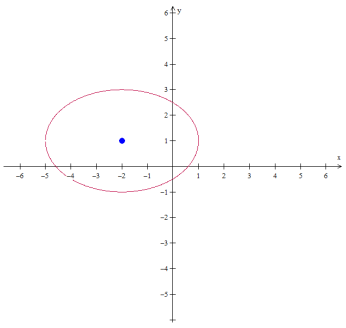
7. Find an equation for each ellipse. Graph the equation
(Similar to p.396 #27-38)

$$Foci: (0,\pm 4)$$
$$\text{length of the major axis is } 18$$

8. Find an equation for each ellipse. Graph the equation
(Similar to p.396 #27-38)

$$Foci: (\pm 4,0)$$
$$\text{y-intercepts}: \pm 3$$

9. Write an equation for each ellipse
(Similar to p.396 #39-42)



10. Analyze each equation, that is, find the center, foci, and vertices of each ellipse. Graph each equation
(Similar to p.396 #43-54)

$$x^2 - 4x + 9y^2 + 36y + 4 = 0$$

11. Analyze each equation, that is, find the center, foci, and vertices of each ellipse. Graph each equation (Similar to p.396 #43-54)

$$16x^2 + 36y^2 + 96x - 288y + 144 = 0$$

12. Find an equation for each ellipse. Graph the equation (Similar to p.396 #55-64)

$$Center: (6,-6)$$
$$Vertex: (10,-6)$$
$$Focus: (7,-6)$$

13. Find an equation for each ellipse. Graph the equation (Similar to p.396 #55-64)

$$Center: (4,2)$$
$$Focus: (7,2)$$
$$Contains \quad Point: (4,4)$$