

THE CIRCLE		
STANDARD FORM		GENERAL FORM
$(x - h)^2 + (y - k)^2 = r^2$		$x^2 + y^2 + Dx + Ey + F = 0$
Center: (h, k)	Radius: r	Complete the square to get Standard Form

THE PARABOLA			
GENERAL FORM			
$x^2 + Dx + Ey + F = 0$		$y^2 + Dx + Ey + F = 0$	
Complete the square to get Standard Form			
STANDARD FORM			
$(x - h)^2 = 4p(y - k)$		$(y - k)^2 = 4p(x - h)$	
Vertex: (h, k)	Opening:	Vertex: (h, k)	Opening:
Focus: $(h, k + p)$	UP if p is positive DOWN if p is negative	Focus: $(h + p, k)$	RIGHT if p is positive LEFT if p is negative
Directrix: $y = k - p$		Directrix: $x = h - p$	

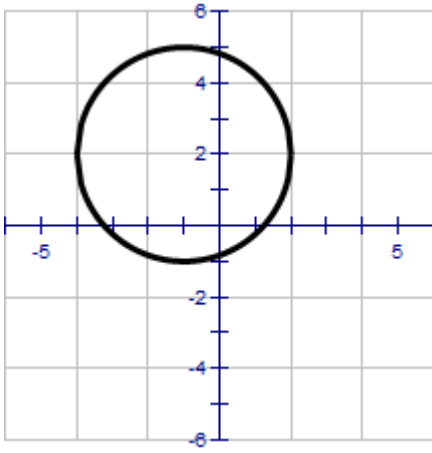
THE ELLIPSE			
GENERAL FORM			
$Ax^2 + Cy^2 + Dx + Ey + F = 0$ where $A \neq C$			
Complete the square to get Standard Form (NOTE: Make sure to factor first!)			
STANDARD FORM			
$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$		$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1$	
Major Axis: $2a$	Foci: $\pm c$	Major Axis: $2a$	Foci: $\pm c$
Minor Axis: $2b$	$c^2 = a^2 - b^2$ $a^2 > b^2$	Minor Axis: $2b$	$c^2 = a^2 - b^2$ $a^2 > b^2$

THE HYPERBOLA			
GENERAL FORM			
$Ax^2 - Cy^2 + Dx + Ey + F = 0$ where $A \neq C$		$Ay^2 - Cx^2 + Dx + Ey + F = 0$ where $A \neq C$	
Complete the square to get Standard Form (NOTE: Make sure to factor first!)			
STANDARD FORM			
$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$		$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$	
Asymptotes:	$y - k = \pm \frac{b}{a}(x - h)$	Asymptotes:	$y - k = \pm \frac{a}{b}(x - h)$
Transverse Axis: $2a$	Foci: c	Transverse Axis: $2a$	Foci: c
Conjugate Axis: $2b$	$c^2 = a^2 + b^2$	Conjugate Axis: $2b$	$c^2 = a^2 + b^2$
a^2 is not necessarily larger than b^2		a^2 is not necessarily larger than b^2	

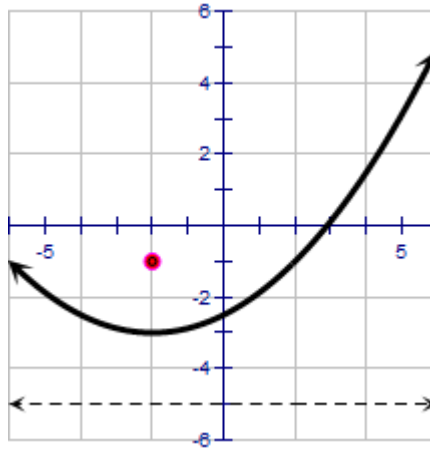
Directions: State the conic section of the graph

1.) $16x^2 - y^2 + 96x + 8y = -112$	Circle	Parabola	Ellipse	Hyperbola
2.) $7x^2 + 3y^2 - 28x - 12y = -19$	Circle	Parabola	Ellipse	Hyperbola
3.) $x^2 + y + 4x - 2 = 0$	Circle	Parabola	Ellipse	Hyperbola
4.) $x^2 + y^2 - x + 2y - 12 = 0$	Circle	Parabola	Ellipse	Hyperbola
5.) $y^2 - 4x^2 - 2y - 16x + 1 = 0$	Circle	Parabola	Ellipse	Hyperbola
6.) $x^2 - 3y^2 + 6y + 6x = 18$	Circle	Parabola	Ellipse	Hyperbola
7.) $x^2 + 3y^2 + 2x - 5y - 129 = 0$	Circle	Parabola	Ellipse	Hyperbola
8.) $2x^2 - 5x + y - 19 = 0$	Circle	Parabola	Ellipse	Hyperbola
9.) $5x^2 + 2y^2 - 2x - 9y - 22 = 0$	Circle	Parabola	Ellipse	Hyperbola

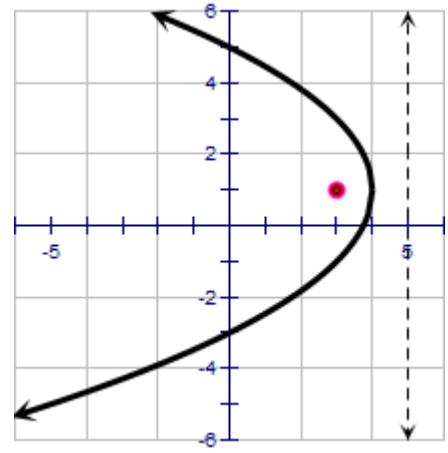
Directions: Write the equation of each graph in standard form.



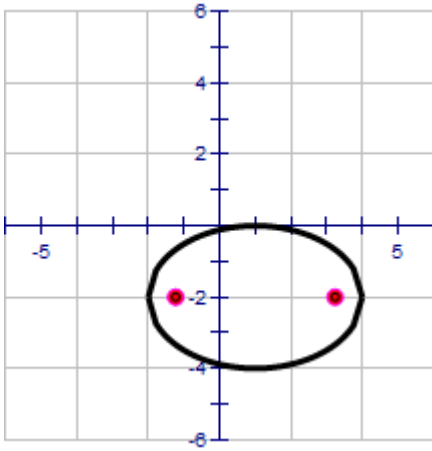
10.) _____



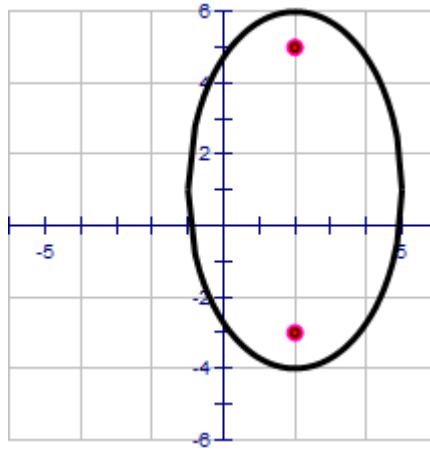
11.) _____



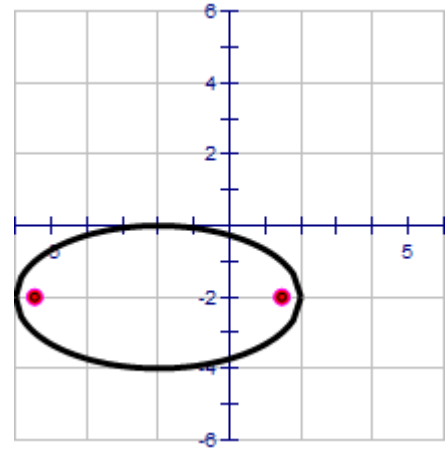
12.) _____



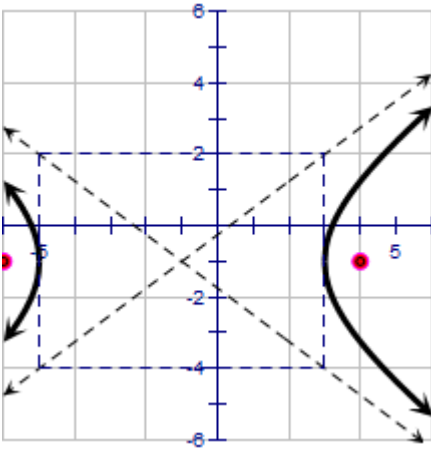
13.) _____



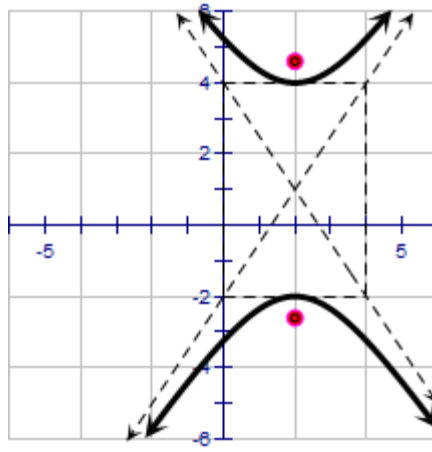
14.) _____



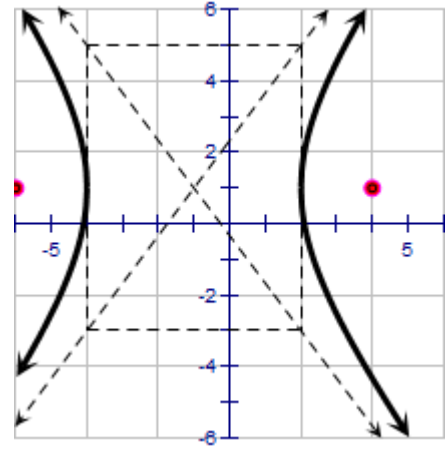
15.) _____



16.) _____



17.) _____



18.) _____

Directions: Find the center and the radius of each circle:

19.) $(x - 2)^2 + y^2 = 49$

Center: _____

Radius: _____

20.) $(x + 3)^2 + (y - 5)^2 = 48$

Center: _____

Radius: _____

21.) $(x - 7)^2 + (y + 2)^2 = 45$

Center: _____

Radius: _____

Directions: Find the vertex, focus, directrix and p value for each parabola. Then graph each parabola.

22.) $(x + 2)^2 = 16(y - 1)$

Vertex: _____ Focus: _____

Directrix: _____ $p =$ _____

23.) $(y + 1)^2 = 8(x + 4)$

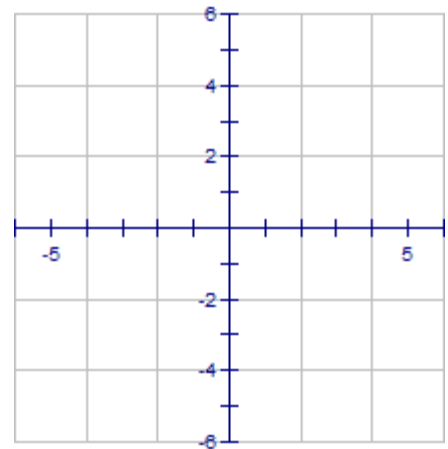
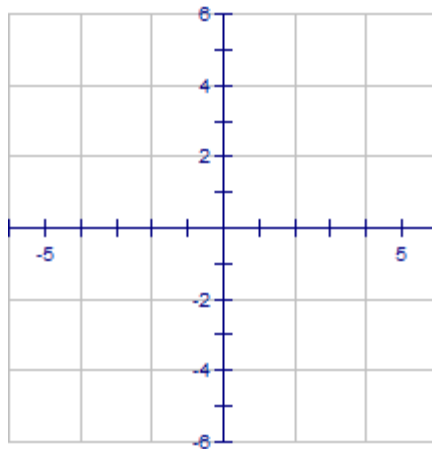
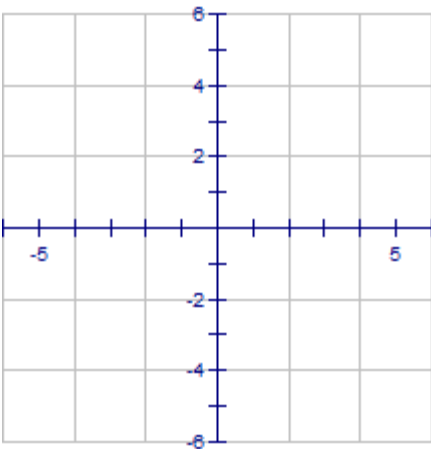
Vertex: _____ Focus: _____

Directrix: _____ $p =$ _____

24.) $(x + 2)^2 = -4(y - 3)$

Vertex: _____ Focus: _____

Directrix: _____ $p =$ _____

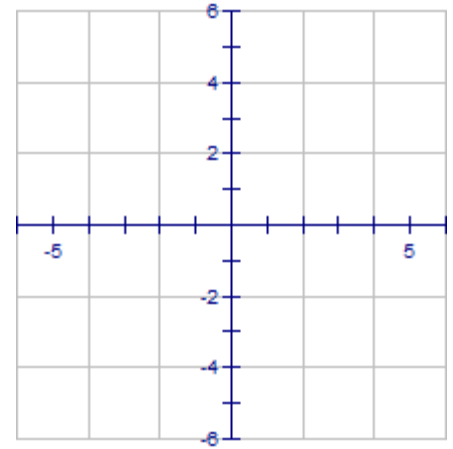


Directions: Change the following from General Form to Standard Form and find the center and radius.

25.) $x^2 + y^2 - 4x + 2y + 1 = 0$

Standard Form: _____

Center: _____ Radius: _____

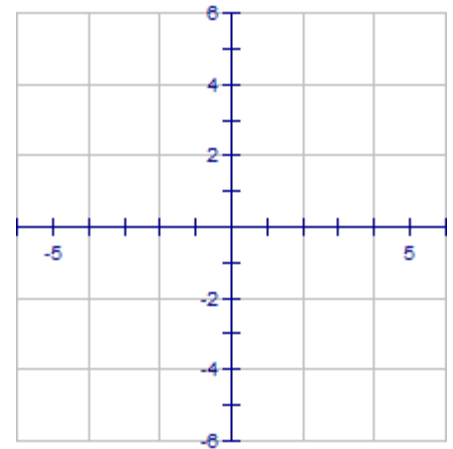


Directions: Find the coordinates of the vertex and the focus. Then find the equation of the directrix and sketch a graph for the following parabolas.

26.) $(x - 2)^2 = 12y + 36$

Vertex: _____ Focus: _____

$p =$ _____ Directrix: _____



Directions: Convert the general form of the equation of the ellipse into standard form.

27.) $9y^2 + 108y + 4x^2 - 56x + 484 = 0$

Standard form: _____

Directions: Convert the general form of the equation of the hyperbola into standard form.

28.) $25x^2 - 9y^2 - 100x - 72y - 269 = 0$

Standard form: _____

Directions: Find the coordinates of the center, foci, and vertices of the ellipse and the length of the major and minor axis. Then graph the equation.

29.) $25x^2 + 100x + 4y^2 + 8y + 4 = 0$

Center: _____

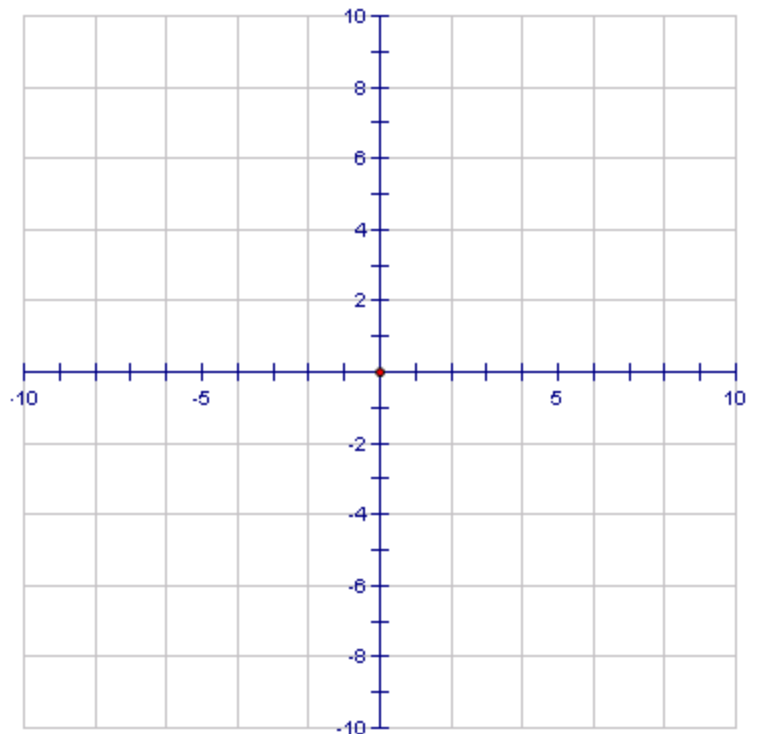
Foci: _____

Length of major axis: _____

Length of minor axis: _____

Major axis vertices: _____

Minor axis vertices: _____



Directions: Find the coordinates of the center, the foci, and the vertices, the length of the transverse and conjugate axis, and the equations of the asymptotes of the hyperbola. Then graph the equation.

30.) $y^2 - 4y - 4x^2 + 40x - 100 = 0$

Center: _____

Foci: _____

Vertices: _____

Asymptotes: _____

Length of Transverse Axis: _____

Length of Conjugate Axis: _____

