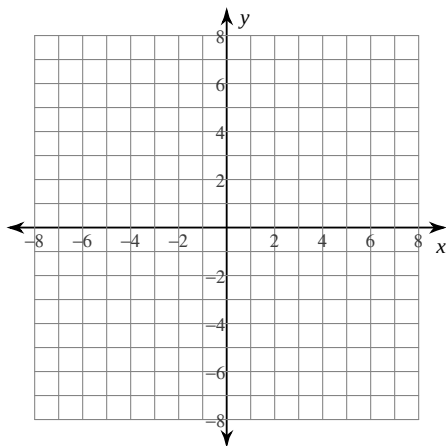


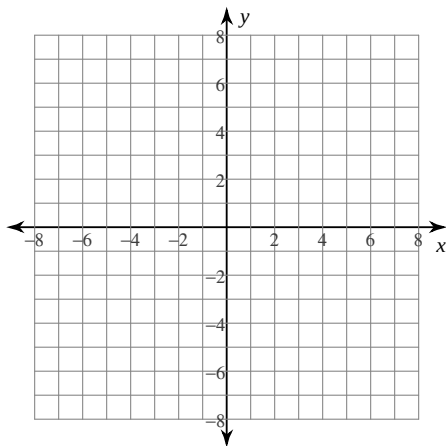
Classifying and Graphing Conic Sections Given the General Equation

Classify each conic section, write its equation in standard form, and sketch its graph. For parabolas, identify the vertex. For circles, identify the center and radius. For ellipses and hyperbolas identify the center and vertices.

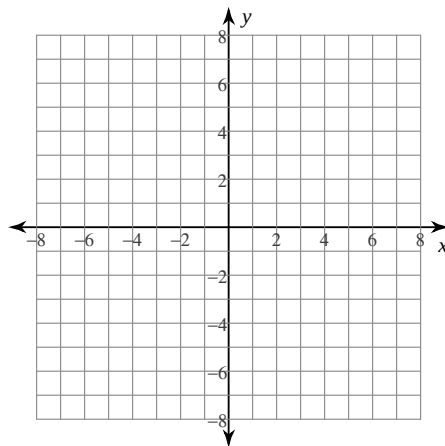
1) $x^2 + 9y^2 + 90y + 189 = 0$



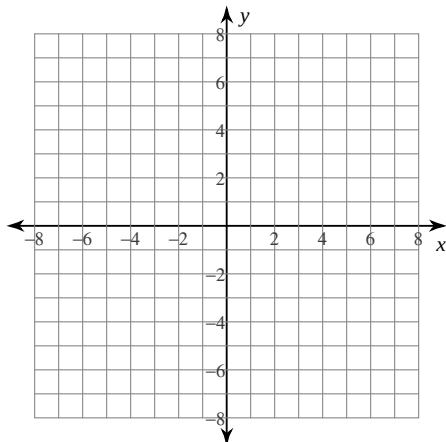
2) $x^2 + y^2 - 6y + 8 = 0$



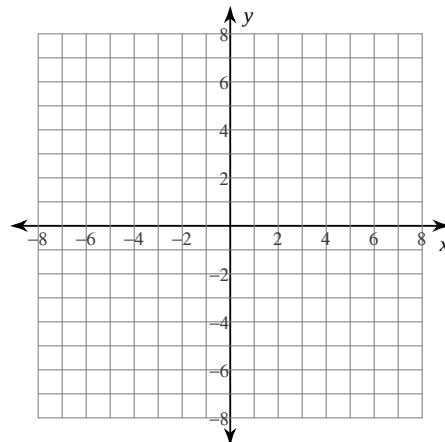
3) $x^2 + y^2 + 4x - 2y - 4 = 0$



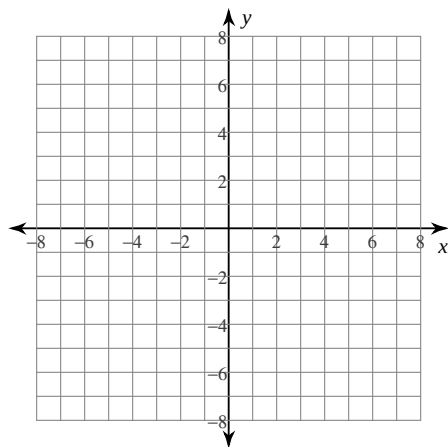
4) $4x^2 - 25y^2 + 50y - 125 = 0$



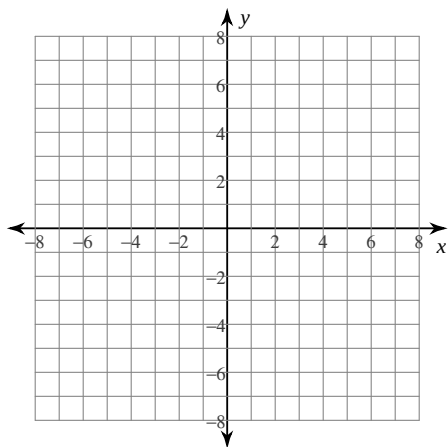
5) $-2x^2 - 20x + y - 46 = 0$



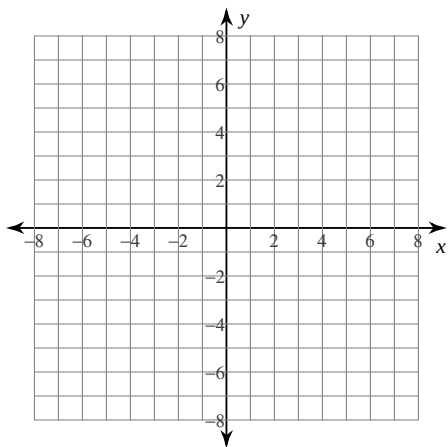
$$6) 4x^2 + y^2 + 2y - 15 = 0$$



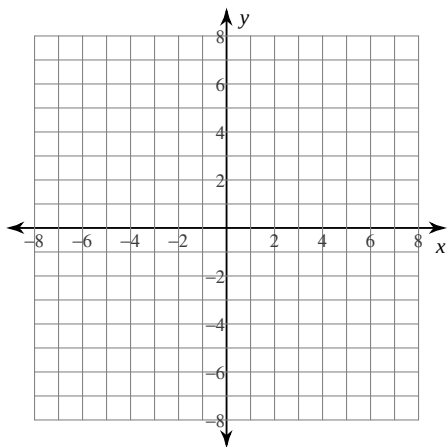
$$7) 49x^2 + 4y^2 - 196 = 0$$



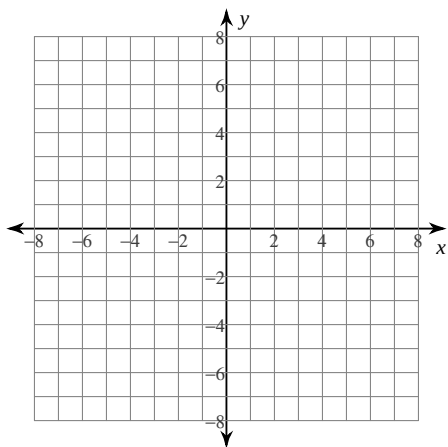
$$8) x^2 + y^2 - 4x - 6y + 4 = 0$$



$$9) x^2 - 12x + y + 36 = 0$$

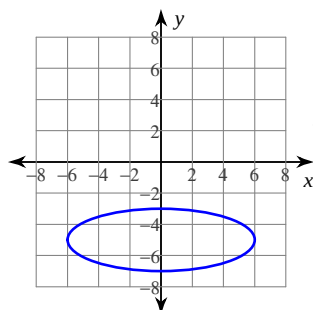


$$10) 64x^2 - 36y^2 + 192x + 36y - 441 = 0$$



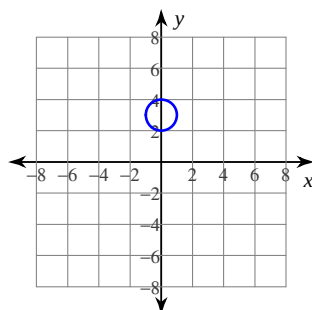
Answers to Classifying and Graphing Conic Sections Given the General Equation

1)



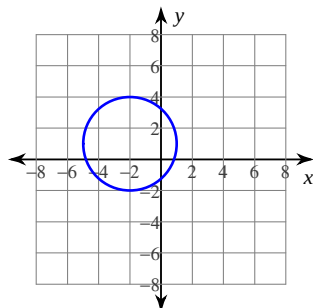
Ellipse
 $\frac{x^2}{36} + \frac{(y+5)^2}{4} = 1$
 Center: (0, -5)
 Vertices: (6, -5), (-6, -5)

2)



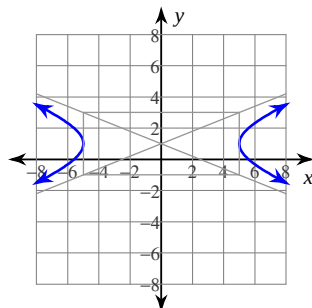
Circle
 $x^2 + (y-3)^2 = 1$
 Center: (0, 3)
 Radius: 1

3)



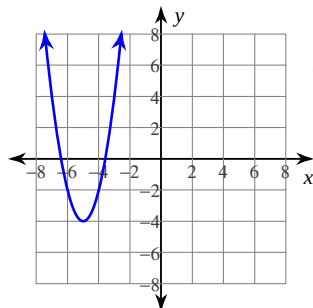
Circle
 $(x+2)^2 + (y-1)^2 = 9$
 Center: (-2, 1)
 Radius: 3

4)



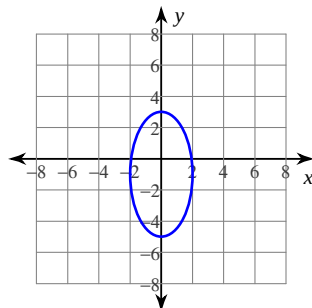
Hyperbola
 $\frac{x^2}{25} - \frac{(y-1)^2}{4} = 1$
 Center: (0, 1)
 Vertices: (5, 1), (-5, 1)

5)



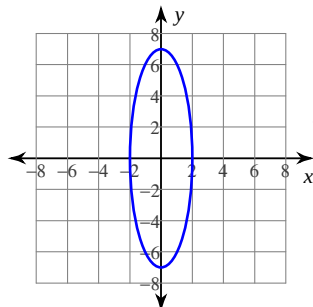
Parabola
 $y = 2(x+5)^2 - 4$
 Vertex: (-5, -4)

6)



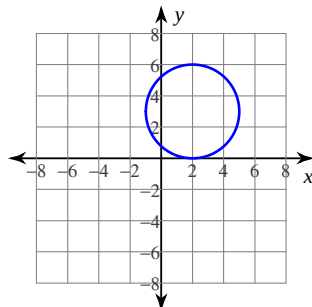
Ellipse
 $\frac{x^2}{4} + \frac{(y+1)^2}{16} = 1$
 Center: (0, -1)
 Vertices: (0, 3), (0, -5)

7)



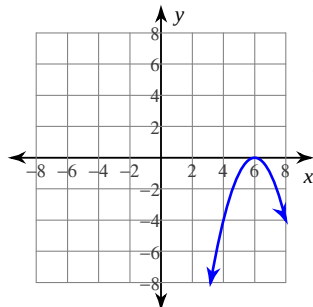
Ellipse
 $\frac{x^2}{4} + \frac{y^2}{49} = 1$
 Center: (0, 0)
 Vertices: (0, 7), (0, -7)

8)



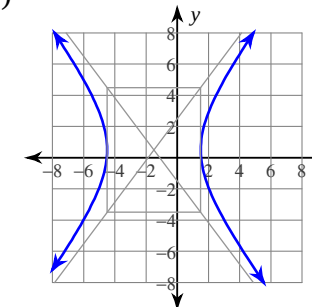
Circle
 $(x-2)^2 + (y-3)^2 = 9$
 Center: (2, 3)
 Radius: 3

9)



Parabola
 $y = -(x-6)^2$
 Vertex: (6, 0)

10)



Hyperbola
 $\frac{(x+\frac{3}{2})^2}{9} - \frac{(y-\frac{1}{2})^2}{16} = 1$
 Center: $(-\frac{3}{2}, \frac{1}{2})$
 Vertices: $(\frac{3}{2}, \frac{1}{2}), (-\frac{9}{2}, \frac{1}{2})$