**1.**  Complete the square in order to put the equation into standard form. Identify the center and the radius or explain why the equation does not represent a circle.



**2.** Find the standard equation of the circle with endpoints of a diameter

$(-3, 7)$ and $(1, 5)$.

**3.** Find an equation of a parabola satisfying the given: Focus $(0, 3)$, Vertex $(0, 0)$

**4.** Find the vertex, the focus, and the directrix of the parabola. Then sketch the parabola. Computer generated graph will not be accepted.

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

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**5.** Find the vertices and the foci of the ellipse with the equation. Then sketch the ellipse. Computer generated graph will not be accepted.

$$4x^{2}+9y^{2}=36$$

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**6.** Find an equation of the ellipse satisfying the conditions

Vertices: $\left(0, 9\right),(0,-9)$, Foci: $\left(0,-5\right),(0, 5)$

**7.** Find an equation of the hyperbola with vertices $\left(-2, 0\right), (2, 0)$ and foci $\left(-5, 0\right), (5, 0)$. Then find the asymptotes.

**8.** Find the center, the vertices, the foci, and the asymptotes of the hyperbola. Then sketch the hyperbola and the asymptotes. Computer generated graph will not be accepted.

$$16y^{2}-9x^{2}=144$$

