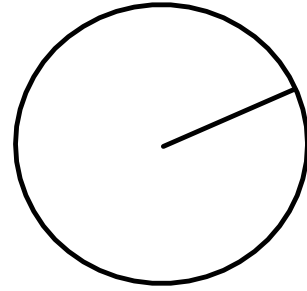# Conic Sections - Circles

Standard Form for the Equation of a Circle

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

Center $= (h,k)$

Radius $= r$

General Form for the Equation of a Circle

$$x^2 + y^2 + Ax + By + C = 0$$

A, B and C are constants.

x^2 and y^2 have the same coefficients.

1. Find the center and radius for each circle.
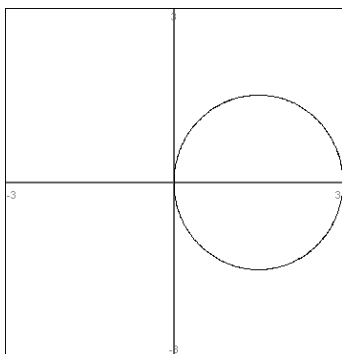
   a) $(x+1)^2 + (y-2)^2 = 49$

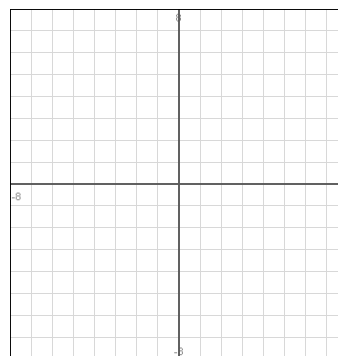   b) $x^2 + \left(y - \dfrac{1}{2}\right)^2 = 1$

c) $x^2 + y^2 = 5$

d) $\left(x + \dfrac{1}{2}\right)^2 + \left(y - \dfrac{3}{2}\right)^2 = \dfrac{9}{4}$

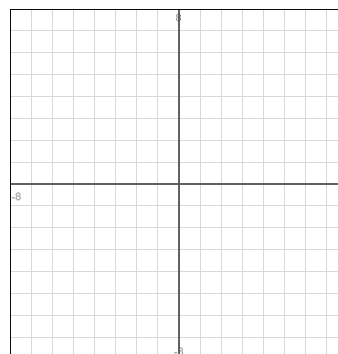2. Find an equation for the circle.

a)

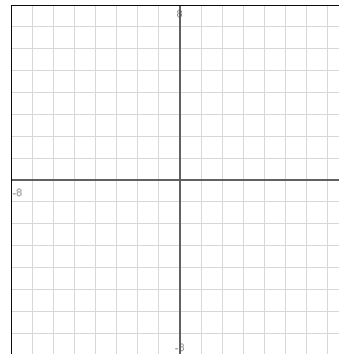b) Center is at $(4, -1)$ and tangent to the line $y = 3$.

c) Center is at $(-1, -3)$ and tangent to the line $3x + 4y = 10$.

3. Find the standard equation for the circle and sketch the graph.

$$2x^2 + 2y^2 - 8x + 12y + 2 = 0$$

4. Find the standard equation for the circle that contains the three points $(2,6)$, $(3,-1)$ and $(-5,5)$.