MATH 1650: SECTION 7.3: CIRCLES

THE STANDARD EQUATION OF A CIRCLE:

The equation of a circle with center (h, k) and radius $r > 0$ is $(x - h)^2 + (y - k)^2 = r^2$.

TO WRITE THE EQUATION OF A CIRCLE IN STANDARD FORM:

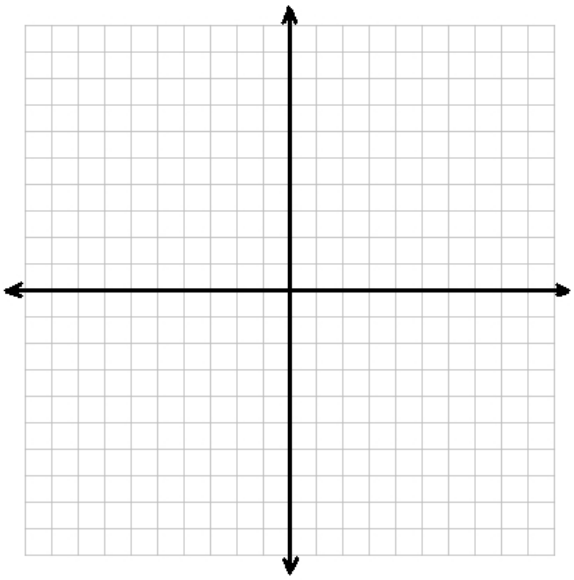
1. Group common variables together on one side of the equation and put the constant on the other.
2. Complete the square on both variables as needed.
3. Divide both sides by the coefficient of the squares. (For circles, they will be the same.)

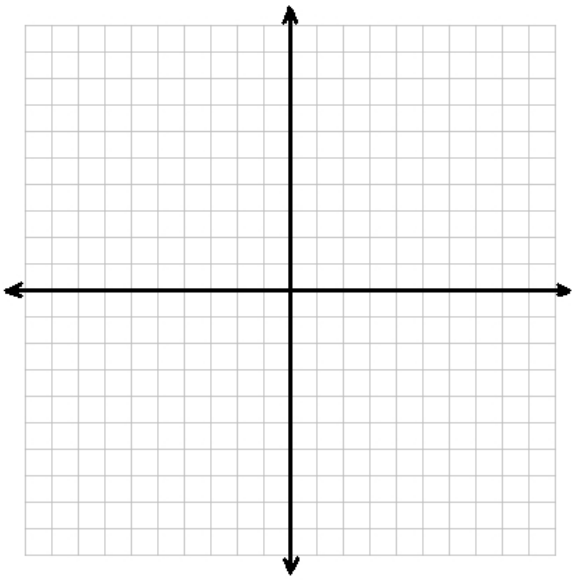
EXAMPLE:

1. For each of the equations below:
   - Graph the equation in the xy-plane.
   - Find the center and radius.

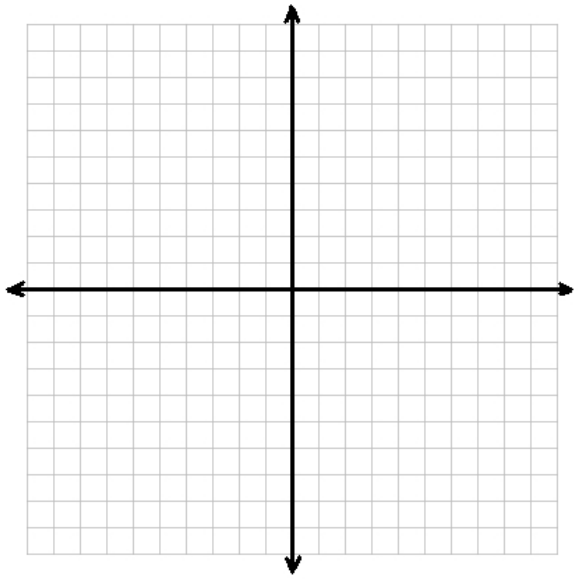
   (a) $(x + 2)^2 + (y - 1)^2 = 4$

   (b) $3x^2 - 6x + 3y^2 + 4y - 4 = 0$





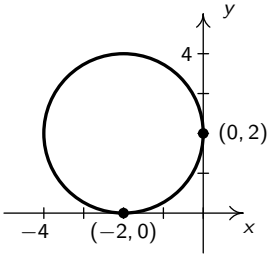
2. Graph $f(x) = -\sqrt{4x - x^2}$.



3. Find the standard form of the circle satisfying the following characteristics:

   (a) The points $(-1, 3)$ and $(2, 4)$ are the endpoints of a diameter.

   (b) The circle whose graph is below.



HOMEWORK: Section 7.3: 1 - 29 odd.