Standard Form of an Equation of a Circle
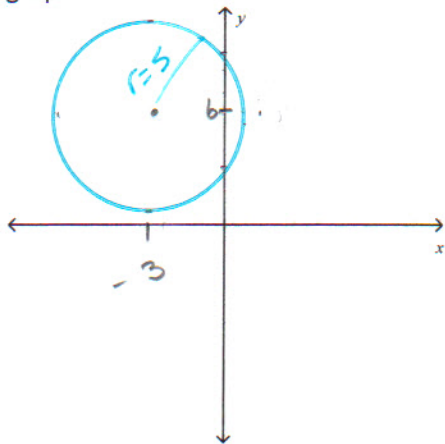
$$(x - h)^2 + (y - k)^2 = r^2$$

center located at (h, k)
radius of r

Write the standard form of the equation of the circle, radius 5 and a center $(-3, 6)$. Then graph.

$r^2 = 25$ (h, k)

$$(x + 3)^2 + (y - 6)^2 = 25$$

Graph an equation of a circle in general form:
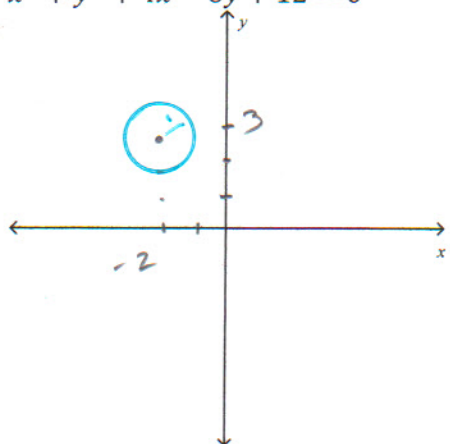$$x^2 + y^2 + 4x - 6y + 12 = 0$$

$$x^2 + 4x + 4 + y^2 - 6y + 9 = -12$$
$$\tfrac{1}{2}(4) \qquad \tfrac{1}{2}(-6) \qquad\qquad +4$$
$$(x + 2)^2 + (y - 3)^2 = 1 \qquad +9$$

center $(-2, 3)$
$r = 1$

Find the general equation of a circle with the given center of $(1, -2)$ whose graph contains the point $(4, -2)$

(x, y)

(h, k)

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

$(4-1)^2 + (-2+2)^2 = r^2$

$9 = r^2$

have (h, k)

need r

$(x-1)^2 + (y+2)^2 = 9$ Standard form

$x^2 - 2x + 1 + y^2 + 4y + 4 - 9 = 0$

$x^2 + y^2 - 2x + 4y - 4 = 0$ general form