

Warm-Up:

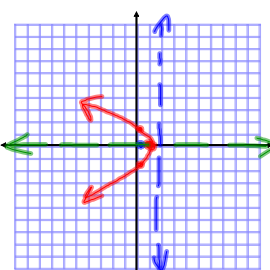
Write the equation for a parabola in standard form.

1) $x = y^2 - 8y + 12$

$$x = \left(y^2 - 8y + 16 \right) + 12 - 16 \left(\frac{-8}{2} \right)^2 = 16$$

$$x = (y - 4)^2 - 4$$

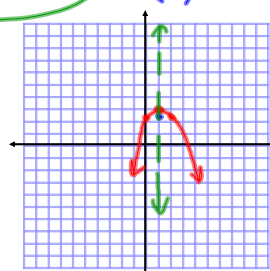
5) $x = -\frac{1}{3}y^2 + 1$ $\frac{1}{4a} = \frac{1}{4(-\frac{1}{3})} = -\frac{1}{\frac{4}{3}} = -\frac{3}{4}$
 $x = -\frac{1}{3}(y-0)^2 + 1$
Vertex: $(1, 0)$
Focus: $(\frac{1}{4}, 0)$
Directrix: $x = \frac{3}{4}$
Axis: $y = 0$
Opens left
LR: $|\frac{1}{-\frac{1}{3}}| = 3$



9) vertex: $(1, 3)$ $h=1$ $k=3$
axis: $x=1$
LR: 2 units = $|\frac{1}{a}|$ $2a=1$ $a=\frac{1}{2}$
 $a < 0$

$$y = -\frac{1}{2}(x-1)^2 + 3$$

$\frac{1}{4(\frac{1}{2})} = -\frac{1}{2}$



Section 10-3: Circles

A **circle** is the set of all points that are equidistant from a fixed point called the **center**.

The equation of a circle with center (h, k) and radius r is:

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



Examples:

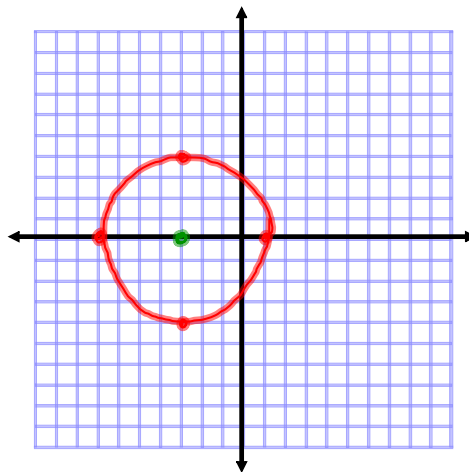
1) Find the center and radius of a circle with the given equation. Then graph.

$$x^2 + y^2 + 6x - 7 = 0$$

$$x^2 + 6x + 9 + y^2 = 7 + 9 \quad \left(\frac{6}{2}\right)^2 = 9$$

$$(x + 3)^2 + y^2 = 16$$

$$C: (-3, 0)$$
$$r = 4$$



Examples:

2) Write an equation for a circle with diameter having endpoints at (2, 8) and (2, -2).

$$\left(\frac{2+2}{2} \quad \frac{8+(-2)}{2} \right)$$
$$C: \underline{(2, 3)}$$
$$r = \sqrt{(2-2)^2 + (8-3)^2}$$
$$r = \sqrt{0 + 25} = \sqrt{25}$$

$$r = 5$$
$$(x-2)^2 + (y-3)^2 = 25$$

Homework: pg. 577-579 #14-30 even, 38, 40, 50