

Goals:

- I can write equations of circles.
- I can graph circles.

Name: _____

Algebra II
Conics | Circles
Hartzler

Midpoint Formula: $(h, k) = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Distance Formula: $d^2 = (x_1 - x_2)^2 + (y_1 - y_2)^2$ or $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Example 1: Find the midpoint of the line segment with endpoints at the given coordinates.

a. $(10, 6), (18, 12)$

b. $(-12, -2), (-10, -6)$

Example 2: Find the distance between each pair of points with the given coordinates.

a. $(3, -5), (13, -11)$

b. $(-4.5, 10.75), (-6.25, -7)$

Example 3: Write each equation in standard form. Identify the vertex, axis of symmetry, and direction of opening of the parabola.

a. $y = -6x^2 - 36x - 8$

Standard form: _____

Vertex: _____

AOS: _____

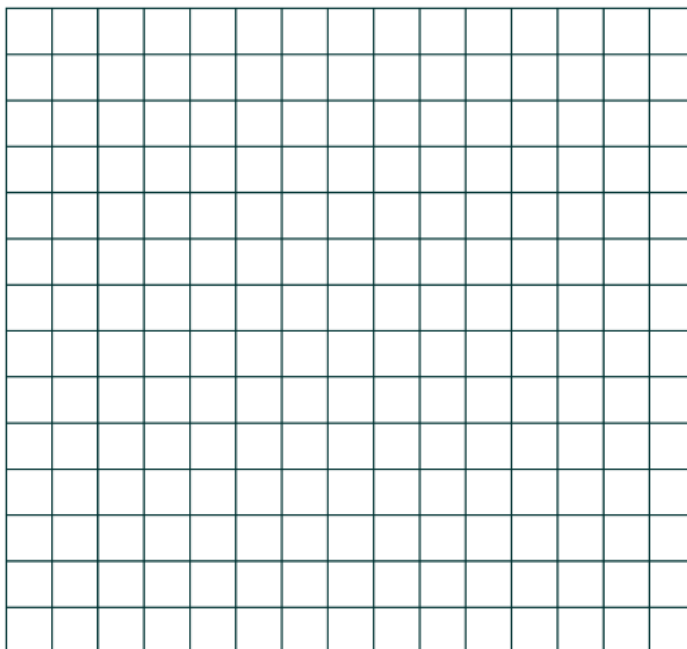
Direction of opening of the parabola: _____

Example 4: Identify the Center and the Radius

$$(x + 2)^2 + (y - 3)^2 = 121$$

Center: _____

Graph:



Radius: _____

Example 6: Finding Center and Radius with Complex Equations

$$x^2 + y^2 + 24x + 10y + 160 = 0$$

$$x^2 + y^2 + 24x + 10y + 160 = 0$$

$$(x^2 + 24x) + (y^2 + 10y) = -160$$

$$(x^2 + 24x + \underline{\quad}) + (y^2 + 10y + \underline{\quad}) = -160 + \underline{\quad} + \underline{\quad}$$

- Original Equation
- Group x's and y's together and constants on the other side.
- Complete the square TWO TIMES
- Factor each set of parentheses
- Simplify the Right side

Center: _____

Radius: _____