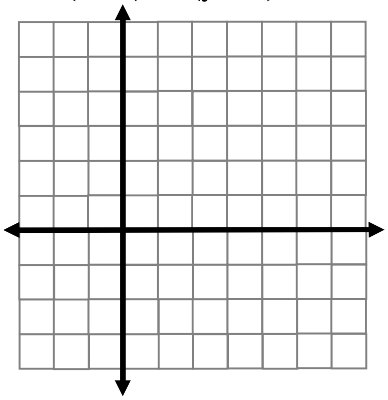
Pre-Calculus: Circles Review **Name ________________________________ Period: ____**

Remember: The equations for a circle is $(x - h)^2 + (y - k)^2 = r^2$. For review, check the class website, lesson 1.9.

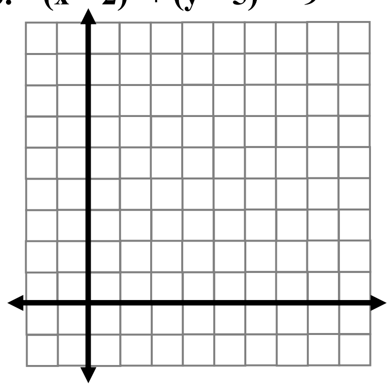
<u>Note</u>: *If r^2 is not a perfect square then leave r in simplest radical form. Use the decimal equivalent for graphing. Example:* $\sqrt{12} = 2\sqrt{3} = 3.46$

1) **<u>Graph the following circle:</u>**

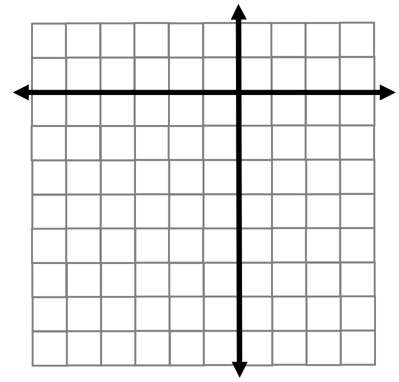
a. $(x - 3)^2 + (y + 1)^2 = 4$



b. $(x - 2)^2 + (y - 5)^2 = 9$



c. $(y + 4)^2 + (x + 2)^2 = 16$



2) **<u>For each circle: Identify its center and radius.</u>**

a. $(x + 3)^2 + (y - 1)^2 = 4$

Center:_____________

Radius:_____________

b. $x^2 + (y - 3)^2 = 18$

Center:___________

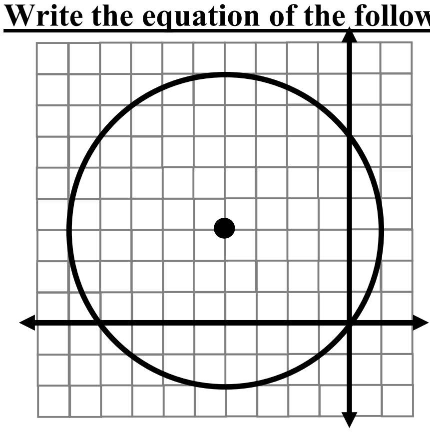
Radius:____________

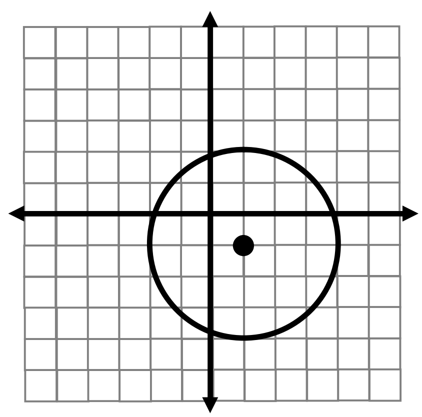
c. $(y + 8)^2 + (x + 2)^2 = 72$

Center:_____________

Radius:_____________

3) **<u>Write the equation of the following circles:</u>**





4) Give the equation of the circle that is tangent to the y-axis and center is (-3, 2).

5) **<u>Compare and contrast the following pairs of circles</u>**

a. <u>Circle #1:</u> $(x - 3)^2 + (y + 1)^2 = 25$

<u>Circle #2</u>: $(x + 1)^2 + (y - 2)^2 = 25$

b. <u>Circle #1:</u> $(y + 4)^2 + (x + 7)^2 = 6$

<u>Circle #2</u>: $(x + 7)^2 + (y + 4)^2 = 36$

Putting Equations in Standard Form

Example 1: $x^2 + y^2 + 6x - 8y - 11 = 0$

$(x^2 + 6x) + (y^2 - 8y) = 11$

$(x^2 + 6x + 9) + (y^2 - 8y + 16) = 11 + 9 + 16$

$(x + 3)^2 + (y - 4)^2 = 36$

Center: (-3, 4)   Radius: 6

Example 2: $x^2 + y^2 - 2x + 6y - 10 = 0$

Center:_______ Radius:__________

6) Find the standard form, center, and radius of the following circles:

6a) $\mathbf{x^2 + y^2 - 4x + 8y - 5 = 0}$

Center:___________

Radius:______________

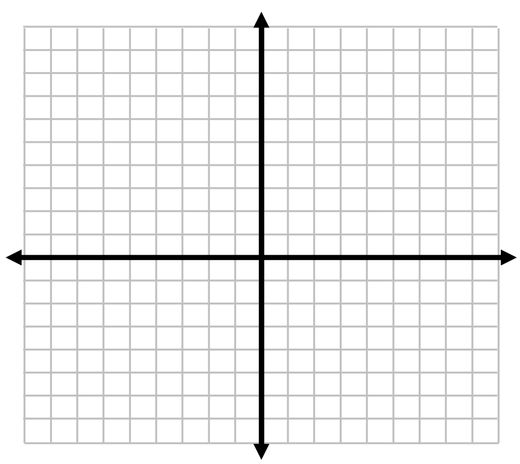
6b) $\mathbf{4x^2 + 4y^2 + 36y + 5 = 0}$

Center:________

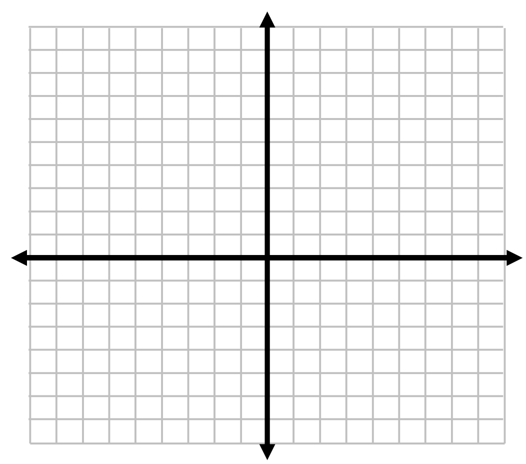
Radius:___________

7) **Graph the following circles:**

7a) $\mathbf{x^2 - 2x + y^2 + 8y - 8 = 0}$



7b) $\mathbf{x^2 + y^2 - 6x + 4y - 3 = 0}$



8) Give the equation of the circle whose center is (5,-3) and goes through (2,5)

9) Give the equation whose endpoints of a diameter at (-4,1) and (4, -5)

10) Give the equation of the circle whose center is (4,-3) and goes through (1,5)

11) Give the equation whose endpoints of a diameter at (-3,2) and (1, -5)