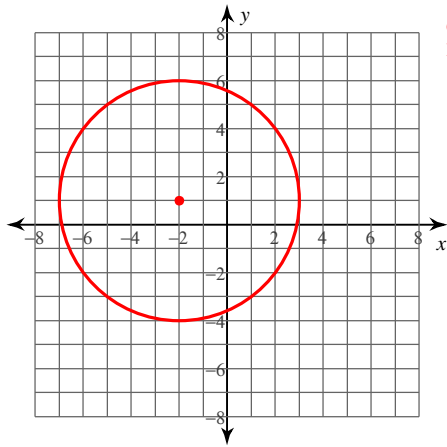
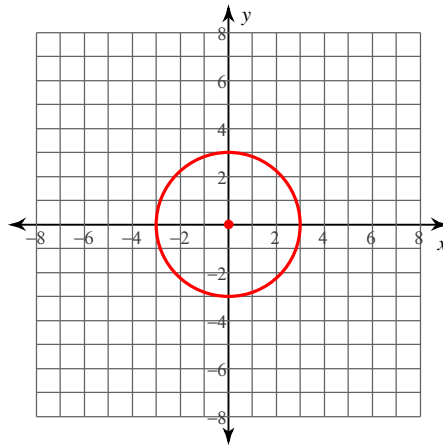


5)  $y^2 + 4x - 20 - 2y = -x^2$



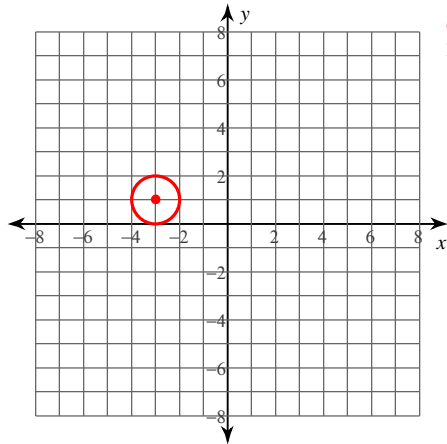
Center:  $(-2, 1)$   
Radius: 5

6)  $-9 = -y^2 - x^2$



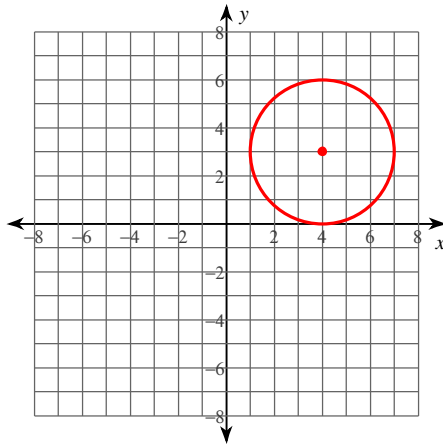
Center:  $(0, 0)$   
Radius: 3

7)  $9 = 2y - y^2 - 6x - x^2$



Center:  $(-3, 1)$   
Radius: 1

8)  $16 + x^2 + y^2 - 8x - 6y = 0$



Center:  $(4, 3)$   
Radius: 3

Use the information provided to write the equation of each circle.

- 9) Center:  $(13, -13)$   
Radius: 4

$$(x - 13)^2 + (y + 13)^2 = 16$$

- 10) Center:  $(-13, -16)$   
Point on Circle:  $(-10, -16)$

$$(x + 13)^2 + (y + 16)^2 = 9$$

- 11) Ends of a diameter:  $(18, -13)$  and  $(4, -3)$

$$(x - 11)^2 + (y + 8)^2 = 74$$

- 12) Center:  $(10, -14)$   
Tangent to  $x = 13$

$$(x - 10)^2 + (y + 14)^2 = 9$$

- 13) Center lies in the first quadrant  
Tangent to  $x = 8$ ,  $y = 3$ , and  $x = 14$

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

- 14) Center:  $(0, 13)$   
Area:  $25\pi$

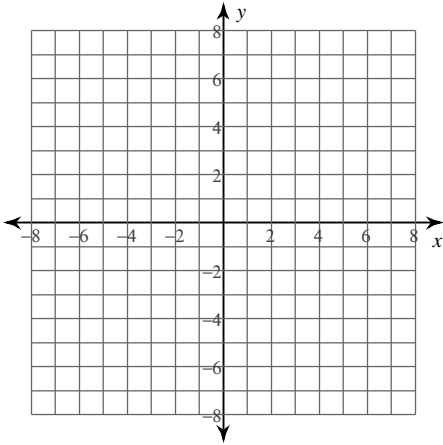
$$x^2 + (y - 13)^2 = 25$$

## Equations of Circles

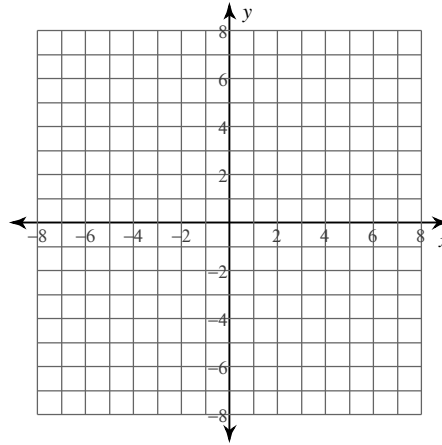
Date \_\_\_\_\_ Period \_\_\_\_\_

**Identify the center and radius of each. Then sketch the graph.**

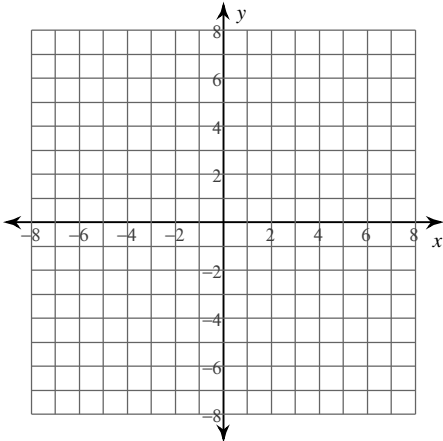
1)  $(x - 1)^2 + (y + 3)^2 = 4$



2)  $(x - 2)^2 + (y + 1)^2 = 16$



3)  $(x - 1)^2 + (y + 4)^2 = 9$



4)  $x^2 + (y - 3)^2 = 14$

