

Introduction to Circles

Do Now:

a) Solve the following equation by completing the square:  $x^2 - 8x + 6 = 0$ .

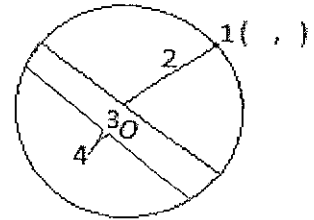
b) Label the parts of circle O.

1) \_\_\_\_\_

3) \_\_\_\_\_

2) \_\_\_\_\_

4) \_\_\_\_\_



**Definition:** A circle is

Derivation of the Equation of a Circle:

1) Which equation represents a circle whose center is  $(3, -2)$ ?

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

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

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

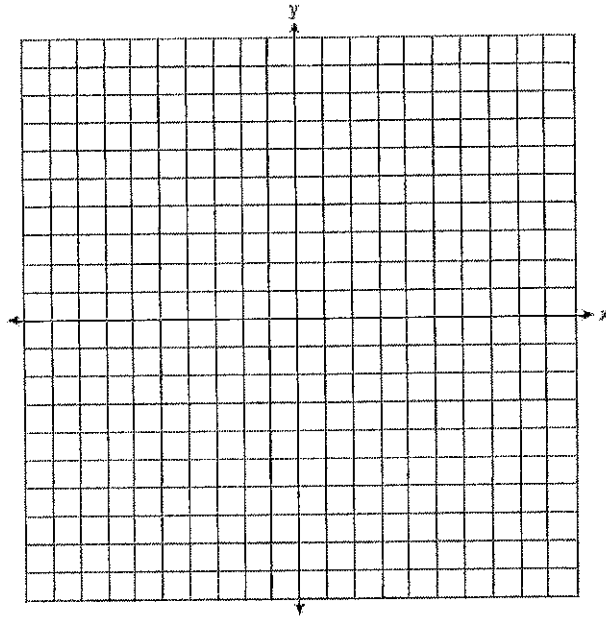
4)  $(x - 2)^2 + (y + 3)^2 = 4$

2) Which equation represents the circle whose center is  $(-2, 3)$  and whose radius is 5?

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

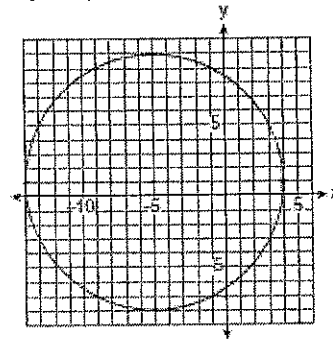
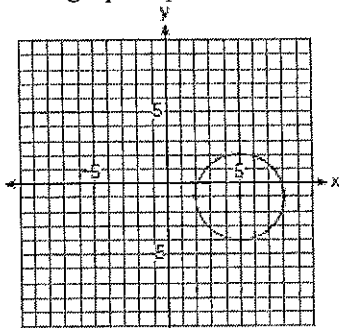
3) John uses the equation  $x^2 + y^2 = 9$  to represent the shape of a garden on graph paper.

Graph  $x^2 + y^2 = 9$  on the accompanying grid.

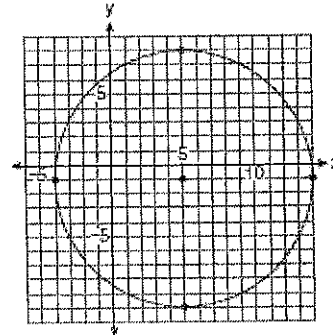
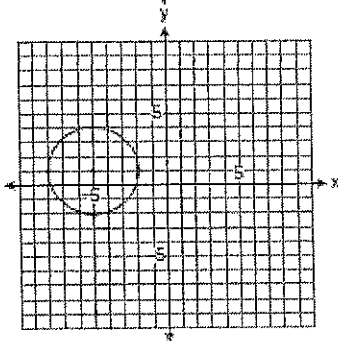


4) Which graph represents a circle with the equation  $(x - 5)^2 + (y + 1)^2 = 9$ ?

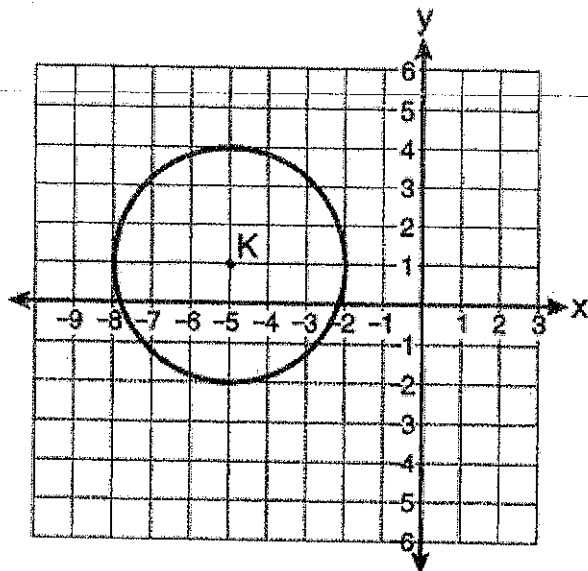
a)



b)



- 5) Which equation represents circle  $K$  shown in the graph below?



- (1)  $(x + 5)^2 + (y - 1)^2 = 3$       (3)  $(x - 5)^2 + (y + 1)^2 = 3$   
(2)  $(x + 5)^2 + (y - 1)^2 = 9$       (4)  $(x - 5)^2 + (y + 1)^2 = 9$

- 6) Write the equation of the circle whose center is  $(0, -3)$  with a radius of  $\sqrt{6}$ .

- 7) Write the equation of the circle with a radius of 13 and a center point whose coordinate is  $(-1, 5)$ .

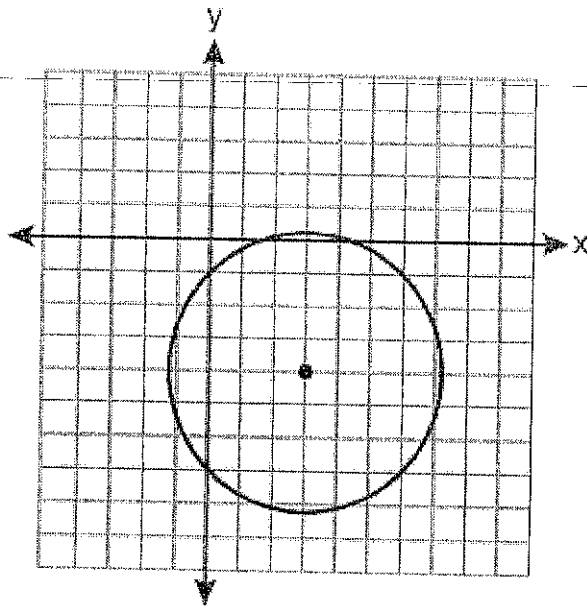
8) Write an equation of a circle whose diameter has endpoints  $(4, -1)$  and  $(-6, 7)$ .

9) Write an equation of a circle with a center that is  $(3, -2)$  and passes through the point  $(-5, 8)$ .

10) Does the point  $(5, 5)$  lie on the circle whose equation is  $(x - 3)^2 + (y - 2)^2 = 16$ ?  
Algebraically justify your answer.

- 11) Which equation represents the circle shown in the graph below that passes through the point  $(0, -1)$ ?

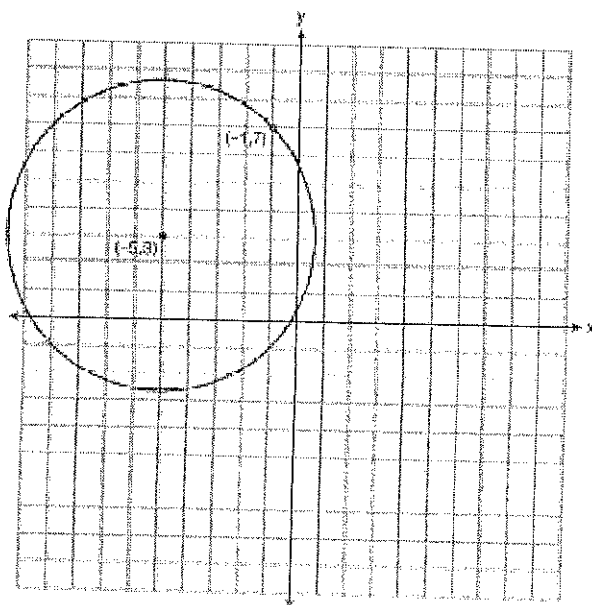
Show Work Here



- 1)  $(x - 3)^2 + (y + 4)^2 = 16$
- 2)  $(x - 3)^2 + (y + 4)^2 = 18$
- 3)  $(x + 3)^2 + (y - 4)^2 = 16$
- 4)  $(x + 3)^2 + (y - 4)^2 = 18$

- 12) A circle shown in the diagram below has a center of  $(-5, 3)$  and passes through point  $(-1, 7)$ .

Show Work Here



Write an equation that represents the circle.

