Date Completed: _____
Mentor Initials: _____

Equations of Circles

.

Multiple Choice

1. A circle in the xy-plane has center $(-2, 4)$ and radius 4. Which of the following is an equation of the circle?

A) $(x-2)^2+(y+4)^2=16$
B) $(x+2)^2+(y-4)^2=16$
C) $(x-2)^2+(y+4)^2=4$
D) $(x+2)^2+(y-4)^2=4$

2. Circle R: $x^2+y^2=64$
Circle S: $(x-3)^2+y^2=64$

In the xy-plane, which translation of the graph of circle R would result in the graph of circle S ?

A) 3 units right
B) 3 units left
C) 3 units up
D) 3 units down

3. Which of the following is an equation of a circle in the xy-plane with center $\left(\frac{1}{5}, \frac{1}{5}\right)$ and a radius with endpoint $\left(1, \frac{4}{5}\right)$?

A) $\left(x+\frac{1}{5}\right)^2+\left(y+\frac{1}{5}\right)^2=\frac{1}{25}$
B) $\left(x-\frac{1}{5}\right)^2+\left(y-\frac{1}{5}\right)^2=\frac{1}{25}$
C) $\left(x+\frac{1}{5}\right)^2+\left(y+\frac{1}{5}\right)^2=1$
D) $\left(x-\frac{1}{5}\right)^2+\left(y-\frac{1}{5}\right)^2=1$

4. In the xy-plane, an equation of circle G is $x^2+(y+2)^2=1$. Circle H is obtained by shifting circle G two units up. Which of the following is an equation of circle H?

A) $x^2+y^2=1$
B) $x^2+(y+4)^2=1$
C) $(x-2)^2+(y+2)^2=1$
D) $(x-2)^2+(y+2)^2=1$

5. Circle A: $x^2 + y^2 = 9$
Circle B: $3x^2 + 3y^2 = 27$

Which statement accurately compares the graphs of the given equations in the xy-plane?

A) The graph of circle B is the same as the graph of circle A.
B) The radius of circle B is three times the length of the radius circle A.
C) The graph of circle B is the result of translating the graph of circle A three units to the left.
D) The graph of circle B is the result of translating the graph of circle A three units to the right.

6. The graph of the equation $x^2 + 8x + y^2 - 16y = 0$ is a circle in the xy-plane. What are the coordinates (x, y) of the center of the circle?

A) $(-4, 8)$
B) $(-4, -8)$
C) $(-8, 16)$
D) $(-8, -16)$

7. $$x^2 + y^2 + 8x - 2y - 64 = 0$$

In the xy-plane, the graph of the given equation is a circle. What are the coordinates (x, y) of the center of the circle?

A) $(16, 1)$
B) $(8, -2)$
C) $(0, -64)$
D) $(-4, 1)$

8. In the xy-plane, the points $(3, 6)$ and $(-3, -6)$ are the endpoints of a diameter of a circle. Which of the following is an equation of the circle?

A) $(x - 3)^2 + (y + 6)^2 = 180$
B) $(x - 3)^2 + (y + 6)^2 = 45$
C) $x^2 + y^2 = 180$
D) $x^2 + y^2 = 45$

9. Circle P: $(x-2)^2+y^2=9$

Circle Q: $(x-4)^2+y^2=9$

If the given equations are graphed in the xy-plane, what statement is true?

A) The center of circle Q is 2 units to the right of the center of circle P.
B) The center of circle Q is 2 units to the left of the center of circle P
C) The center of circle Q is 2 units up from the center of circle P.
D) The center of circle Q is 4 units up from the center of circle P.

10. $x^2+y^2+14x-12y+4=0$

In the xy-plane, the graph of the given equation is a circle. What is the length of the radius of the circle?

A) 3
B) 6
C) 9
D) 81

Grid-In

11. A circle in the xy-plane has its center at $(-1,\ 6)$ and has a radius of 4. An equation of this circle is $x^2+y^2+dx+ey+f=0$. What is the value of f ?

12. A circle in the xy-plane has a diameter with endpoints $(1,-4)$ and $(7,4)$. If the point $(0,c)$ lies on the circle and $c>0$, what is the value of c ?

13. A circle in the xy-plane is centered at $(-2,12)$ and is tangent to the line $x=-5$. What is the length of the diameter of the circle ?

14. $(x-3)^2+(y+2)^2=9$

In the xy-plane, the graph of the equation above is a circle. Point R is on the circle and has coordinates $(6,-2)$. If $\overline{RS}$ is a diameter of the circle, what is the x-coordinate of Point S ?

15. In the xy-plane, the graph of $2x^2+4x+2y^2-20y=110$ is a circle. What is the radius of the circle?