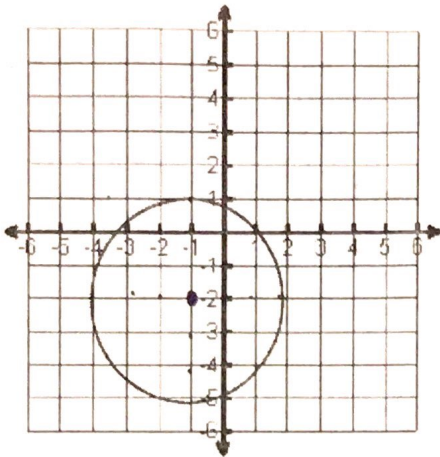


9.12

Unit 9 Quiz II SG KEY

Directions: Use the graph for problems 1 - 4.



- 1) What is the center? $(-1, -2)$
- 2) What is the radius? 3
- 3) What is the equation of the circle in standard form?

$$(x+1)^2 + (y+2)^2 = 9$$

- 4) What is the equation of the circle in general form?

$$(x+1)(x+1) + (y+2)(y+2) - 9 = 0$$

$$x^2 + x + x + 1 + y^2 + 2y + 2y + 4 - 9 = 0$$

$$x^2 + y^2 + 2x + 4y - 4 = 0$$

Directions: Find each equation.

- 5) Given a center of $(4, -5)$ and a diameter of 8, written in standard form

$$r=4 \quad c:(4, -5)$$

$$(x-4)^2 + (y+5)^2 = 16$$

- 6) Given the center of $(4, 0)$ and a radius of $\sqrt{15}$ written in standard form

$$c:(4, 0) \quad r:\sqrt{15}$$

$$\sqrt{15}^2 = 15$$

$$(x-4)^2 + y^2 = 15$$

- 7) Given the general form of the equation $x^2 + y^2 - 4x + 5y - 8 = 0$, written in standard form

$$x^2 - 4x + \boxed{4} + y^2 + 5y + \boxed{\frac{25}{4}} = 8 + \boxed{4} + \boxed{\frac{25}{4}}$$

$$\left(\frac{-4}{2}\right)^2 = 4 \quad \left(\frac{5}{2}\right)^2$$

$$(x-2)^2 + \left(y+\frac{5}{2}\right)^2 = 18.25$$

- 8) Given the center of $(-2, 1)$ and another point on the circle at $(4, 9)$, written in standard form

$$r = \sqrt{(4+2)^2 + (9-1)^2}$$

$$\sqrt{36 + 64}$$

$$r = 10 \quad c = (-2, 1)$$

$$(x+2)^2 + (y-1)^2 = 100$$

Directions: Find each equation.

- 9) Given the center $(-6, -1)$ and a tangent line of $x = -3$, written in general form

$$c:(-6, -1)$$

$$r: 3$$



$$(x+6)^2 + (y+1)^2 = 9$$

standard \rightarrow

General Form:

$$(x+6)(x+6) + (y+1)(y+1) - 9 = 0$$

$$x^2 + 6x + 6x + 36 + y^2 + y + y + 1 - 9 = 0$$

$$x^2 + y^2 + 12x + 2y + 28 = 0$$

- 10) Given the general form of the equation $5x^2 + 5y^2 + 30x + 40y - 30 = 0$, written in standard form

- divide everything by 5.

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

$$x^2 + 6x + \boxed{9} + y^2 + 8y + \boxed{16} = 6 + \boxed{9} + \boxed{16}$$

$$(x+3)^2 + (y+4)^2 = 31$$

Directions: Use the given equation to solve each set of problems.

Equation: $(x + 6)^2 + (y - 5)^2 = 196$

11) Find the center.

$(-6, 5)$

* change the signs from equation.

12) Find the radius.

$r = \sqrt{196} = 14$

13) What is the area of this circle?

$a = \pi r^2$

$a = \pi(14^2) = 196\pi$

Equation: $x^2 + y^2 - 6x + 10y - 15 = 0$

14) Find the center.

$x^2 - 6x + 9 + y^2 + 10y + 25 = 15 + 9 + 25$

$(x - 3)^2 + (y + 5)^2 = 49$

$C: (3, -5)$

15) Find the radius.

$r = \sqrt{49} = 7$

16) What is the circumference of this circle?

$C = 2\pi r$

$C = 2\pi 7 = 14\pi$

Directions: Solve each problem.

17) A line segment has a midpoint of $(3, -5)$ and an endpoint of $(5, 1)$. What is the ordered pair that represents the other endpoint of the segment?

$m_x m_y = (\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$ $(1, -11)$

$2 \cdot 3 = \frac{5 + x}{2} \cdot 2$ $2 \cdot -5 = \frac{1 + y}{2} \cdot 2$

$6 = 5 + x$

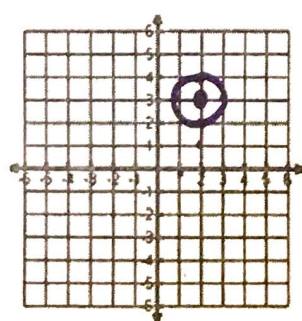
$x = 1$

$-10 = 1 + y$

$-11 = y$

Directions: Graph the circle.

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



$C: (2, 3)$
 $r: \sqrt{1} = 1$

18) What is the ordered pair that represents coordinate B, if \overline{AC} is partitioned by B at a ratio of 2:3 for the coordinates $A(5, -1)$ and $C(0, 9)$?

$(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1))$

$5 + \frac{2}{5}(0 - 5) = -1 + \frac{2}{5}(9 - (-1)) =$

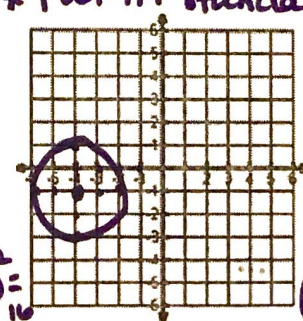
$\frac{3}{3}$

$\frac{3}{3}$

$B: (3, 3)$

20) $x^2 + y^2 - 8x + 2y + 13 = 0$

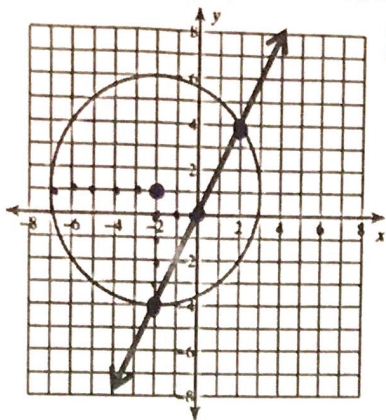
* Put in standard form 1st



$C: (4, -1)$
 $r: \sqrt{4} = 2$

$(\frac{-8}{2})^2 = 16$ $(\frac{2}{2})^2 = 1$
 $x^2 - 8x + 16 + y^2 + 2y + 1 = -13 + 16 + 1$
 $(x - 4)^2 + (y + 1)^2 = 4$

Direction: Use the graph below to answer questions 21 – 22.



21) What is the system of equations that represents the given graph?

Equation of circle:
 $(x+2)^2 + (y-1)^2 = 25$

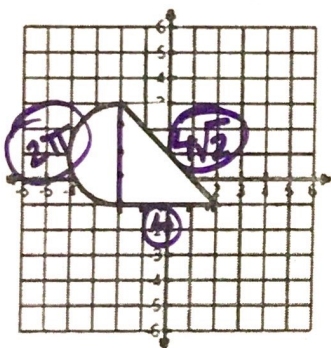
Equation of line: $y = 2x$

22) What is the solution(s) to this system of equations? Where do circle & line intersect?

Points $(2,4)$ & $(-2,-4)$

Directions: Solve each problem.

23) What is the TOTAL distance around the given shape?
 (Perimeter)



$$4^2 + 4^2 = x^2$$

$$16 + 16 = x^2$$

$$32 = x^2$$

$$4\sqrt{2} = x$$

$$\frac{2\pi r}{2} = \text{perimeter of semi circle}$$

$$r = 2$$

$$\frac{2\pi(2)}{2} = 2\pi$$

$$\text{Perimeter} = 2\pi + 4\sqrt{2} + 4$$

or
 15.94

24) A new ride at Six Flags consists of a ring that holds 50 riders. If the center of this ring is at the origin and one of the riders is on the circular ring at $(16, 15.1)$, what is the distance the rider travels in one complete revolution of the circle if each unit on the coordinate plane is equivalent to 2 feet?

$C: (0,0)$

$Pt: (16, 15.1)$

$$\text{radius} = \sqrt{(16-0)^2 + (15.1-0)^2}$$

$$\sqrt{256 + 228.01}$$

$$\sqrt{484.01}$$

$$r \approx 22 \text{ ft}$$

$$\text{Circumference} = 2\pi(22) =$$

$$44\pi \text{ or } 138.23$$

$$\text{distance} = 138.23$$

$$\times 2 \text{ ft}$$

$$\approx 276.46 \text{ ft/revolution}$$