Name Jordan Mack
Date 02-1-23

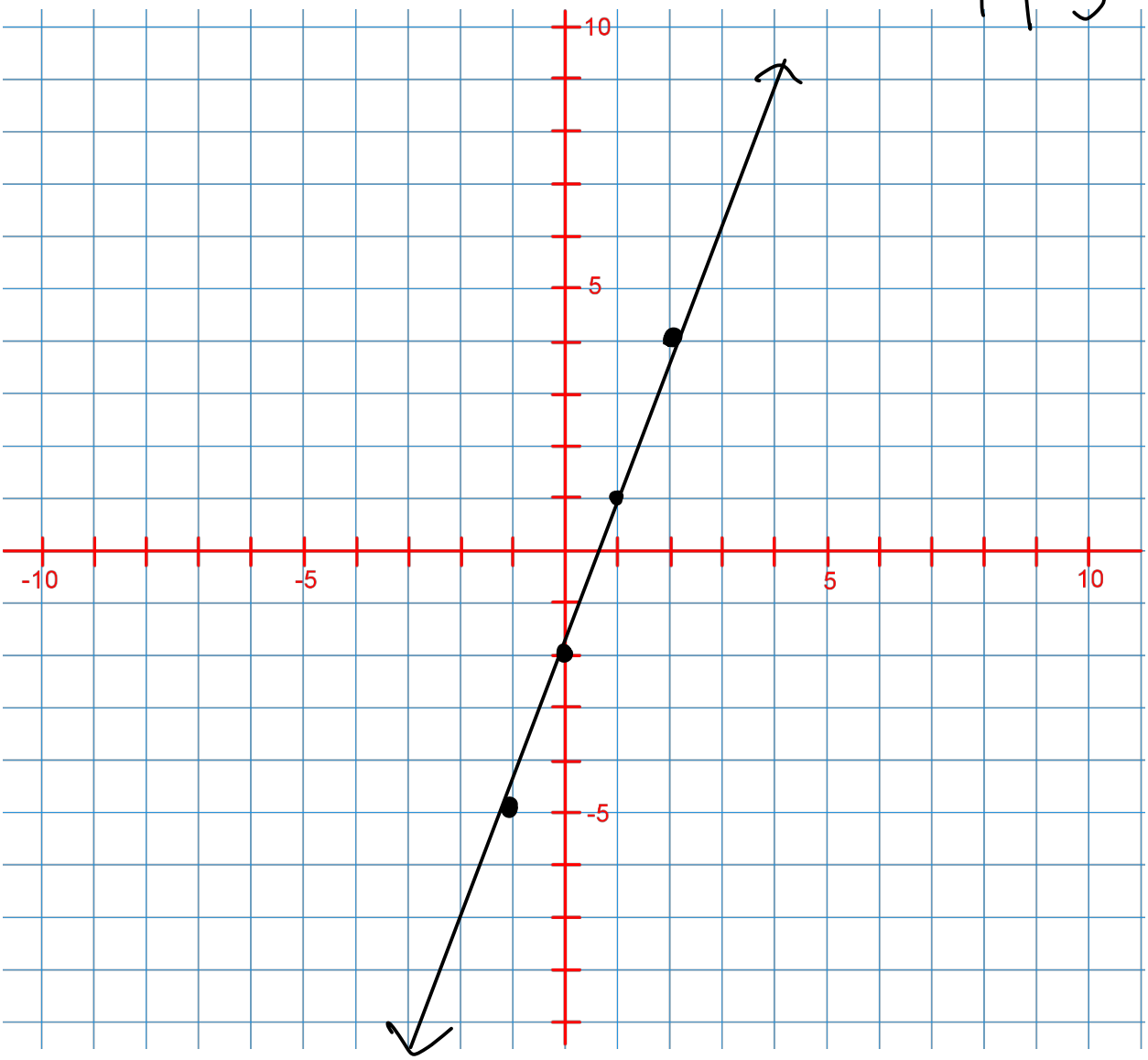
MAT 231
Assessment# 1

**Assessment# 1 –Chapter Sections 1.1 to 1.3**

| X | Y |
|---|---|
| 1 | 1 |
| 2 | 4 |
| 3 | 7 |
| -1 | -5 |

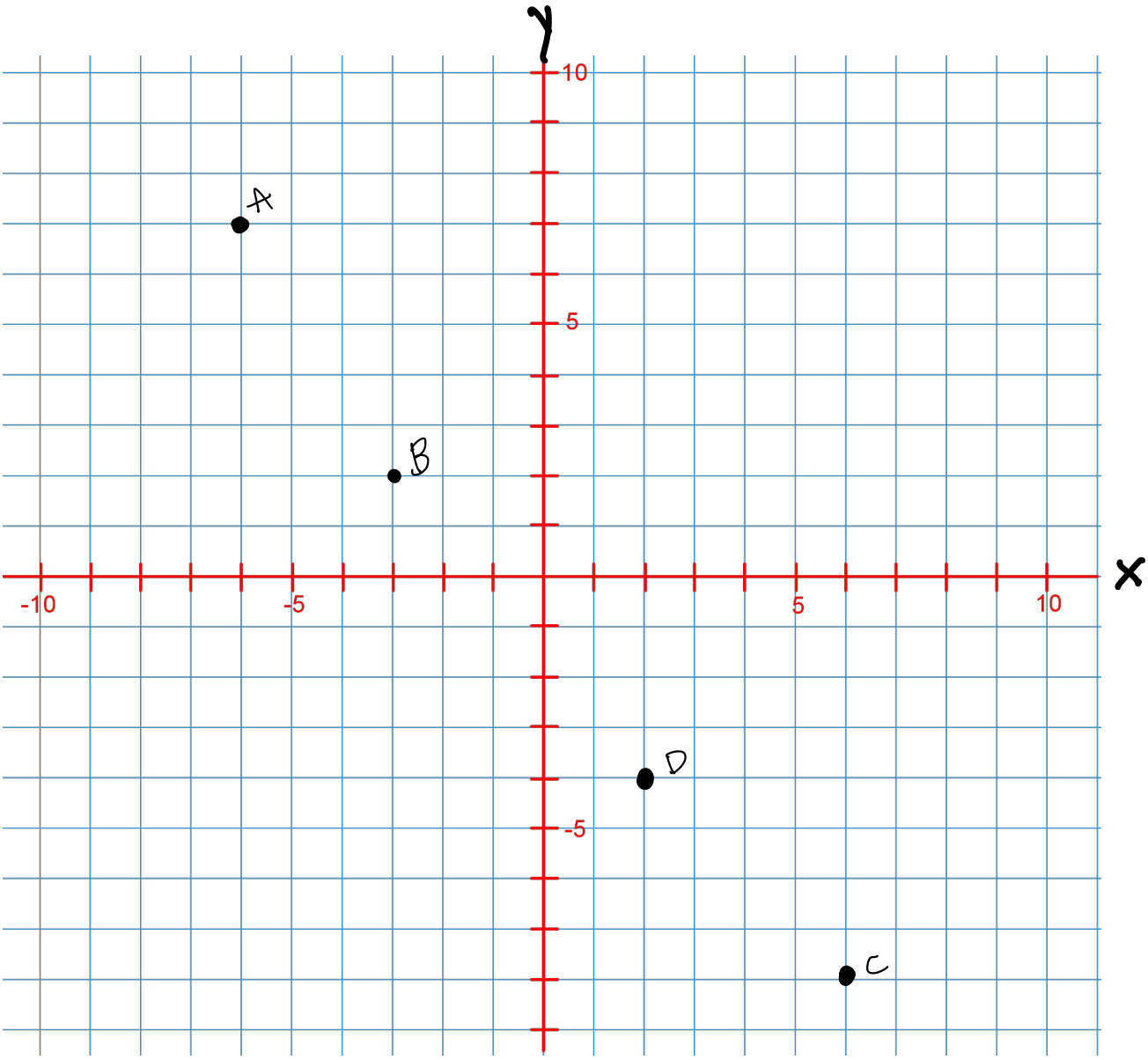
**Directions:** Provide complete responses to each question.

1. Sketch the following linear equation: $y = 3x - 2$



**Name** **MAT 231**
**Date** **Assessment# 1**

2. Find the coordinates of the following points and plot each point:
   a. A point is located six units to the left of the *y*-axis and seven units above the *x*-axis. (-6,7)
   b. A point is located three units to the left of the *y*-axis and two units above the *x*-axis. (-3,2)
   c. A point is located six units to the right of the *y*-axis and eight units below the *x*-axis. (6,-8)
   d. A point is located two units to the right of the *y*-axis and four units below the *x*-axis. (2,-4)



**Name** **MAT 231**
**Date** **Assessment# 1**

3. Determine the quadrant(s) in which $(x, y)$ is located so that the condition(s) is (are) satisfied.
   a. $x < -10$ and $y < -2$
      Quadrant: III
   b. $x < -1$ and $y > 2$
      Quadrant: II
   c. $x > 1$ and $y > -2$
      Quadrant: IV
   d. $x > 2$ and $y < 1$
      Quadrant: I

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

4. . Find the distance and the midpoint for the following points.
   a. $(-4, -1), (-2, 3)$
      $x_1 \; y_1 \quad x_2 \; y_2$

$d = \sqrt{(-2+4)^2 + (3+1)^2}$
$\sqrt{(2)^2 + (4)^2}$
$\sqrt{4+16}$
$d = \sqrt{20}$

$M = \frac{-4+(-2)}{2} \quad \frac{-1+3}{2}$
$\frac{-6}{2} \quad (-3, 1) \quad \frac{2}{2}$

   b. $(6, -2), (2, 4)$
      $x_1 \; y_1 \quad x_2 \; y_2$

$\sqrt{(2-6)^2 + (4+2)^2}$
$\sqrt{(-4)^2 + (6)^2}$
$16 + 36 \quad \sqrt{52}$

$\frac{6+2}{2}, \frac{-2+4}{2}$
$\frac{8}{2}, \frac{2}{2} \quad (4, 1)$

   c. $(-6, -1), (-1, 6)$
      $x_1 \; y_1 \quad x_2 \; y_2$

$\sqrt{(-1+6)^2 + (6+1)^2}$
$(5)^2 + (7)^2$
$\sqrt{74}$

$\frac{-6+-1}{2}, \frac{-1+6}{2}$
$\left(\frac{-7}{2}, \frac{5}{2}\right)$

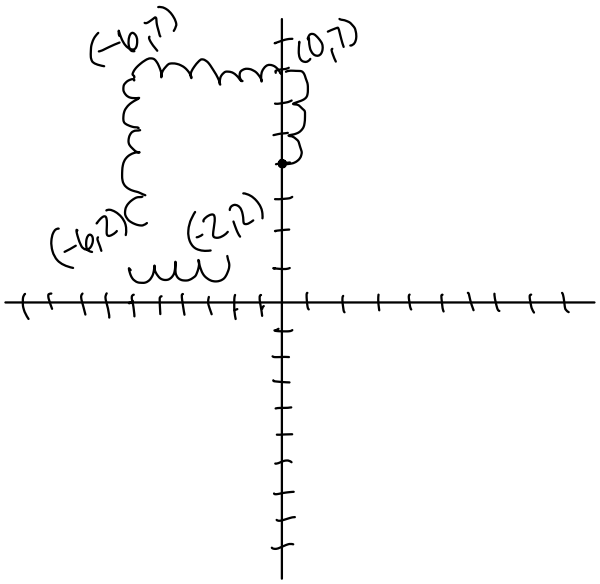
   d. $(5, 4), (4, 5)$
      $x_1 \; y_1 \quad x_2 \; y_2$

$\sqrt{(4-5)^2 + (5-4)^2}$
$(-1)^2 + (1)^2$
$1+1 \quad \sqrt{2}$

$\frac{5+4}{2} \quad \frac{4+5}{2}$
$\left(\frac{9}{2}, \frac{9}{2}\right)$

**Name** **MAT 231**
**Date** **Assessment# 1**

5. The point $A$ has coordinates (0, 4). If $A$ is moved 3 units upward 6 units to the left; and then moved 5 units downward 4 units to the right, what are the new coordinates of $A$?




(-2,2)

**Name** **MAT 231**
**Date** **Assessment# 1**

6. Use the *intercept form* to find the equation of the line with the given intercepts. The intercept form of the equation of a line with intercepts ($a$, 0) and (0, $b$) is

$$\frac{x}{a}+\frac{y}{b}=1,\ a\neq 0,\ b\neq 0.$$

$x_1\ y_1$

$x$-intercept: (–3, 0)

$y$-intercept: (0, 8)

$x_2\ y_2$

$$\frac{8-0}{0+3} \quad \frac{8}{3}$$

$$y=\frac{8}{3}x+8$$

**Name** **MAT 231**
**Date** **Assessment# 1**

7. Find the slope-intercept form of the equation of the line passing through the point:
P(6, −2), Q(−6, 6)

$x_1$ $y_1$ $x_2$ $y_2$

$y = mx + b$

slope $\frac{6 - -2}{-6 - 6}$ $\frac{18}{12} \div 4$ $\frac{-2}{3}$

$y - y_1 = m(x - x_1)$

$y - (-2) = \frac{-2}{3}(x - 6)$

$y + 2 = \frac{-2}{3}x + \frac{4}{2}$

$\boxed{y = -\frac{2}{3}x + 2}$

y-intercept (0,2)

8. Write the standard form of the equation of the circle with the given characteristics:
Center:(3, 1); Radius: 7

$\sqrt{(x-h)^2 + (y-k)^2} = r$

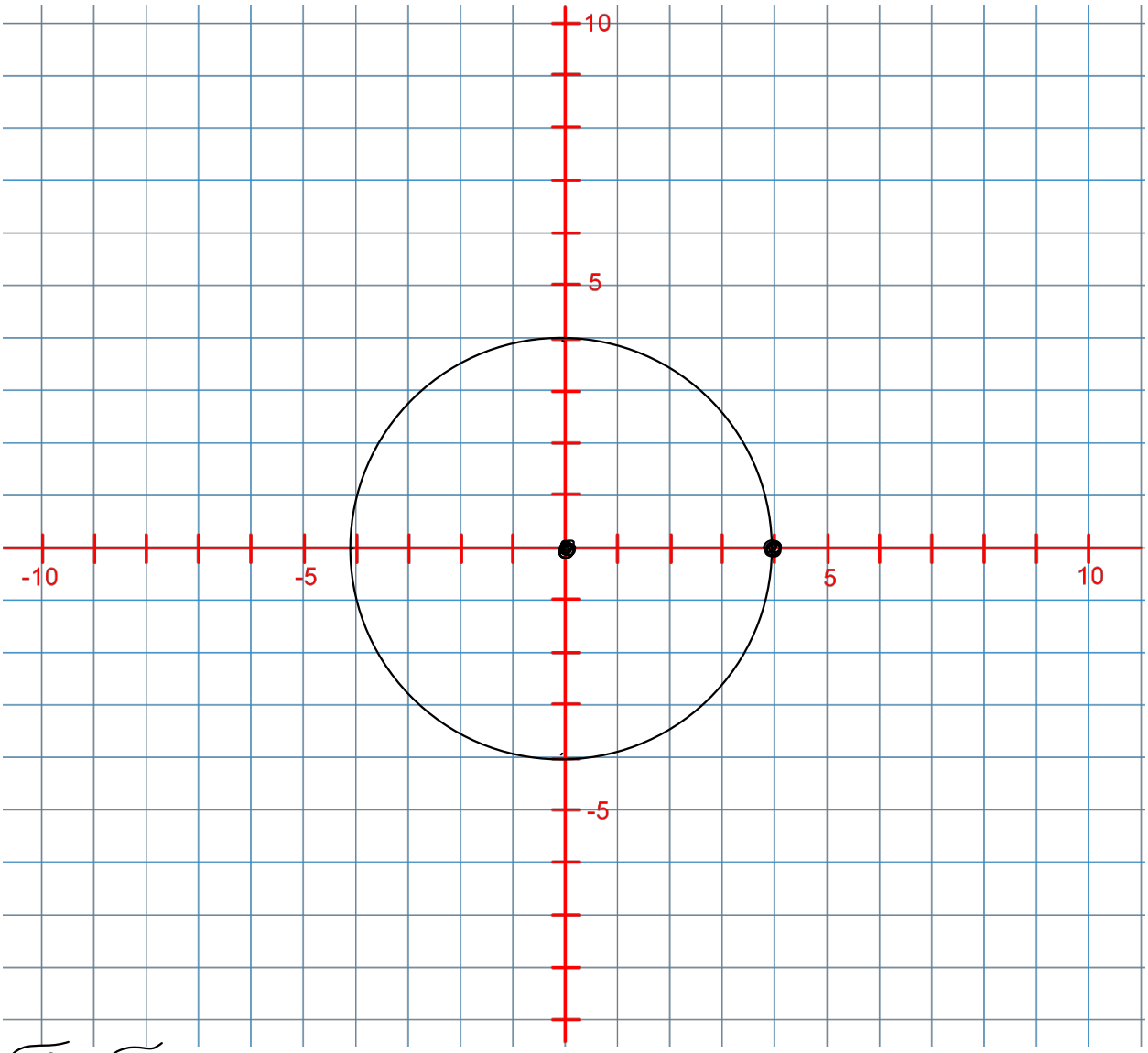
$\sqrt{(x-3)^2 + (y-1)^2} = 7^2$

$(x-3) + (y-1) = 49$

**Name** **MAT 231**
**Date** **Assessment# 1**

9. Find the center and radius of the circle, and sketch its graph.

$x^2 + y^2 = 16$




$\sqrt{x^2} = \sqrt{y^2} = \sqrt{16}$

$x = \sqrt{(4+y)(4-y)}$

$r = 4$

4,0

$\sqrt{(x-h)^2 + (y-k)^2} = r$

0 0

$(x-0)^2 + (y-0)^2 = 16$

(0,0) = center

radius = 4

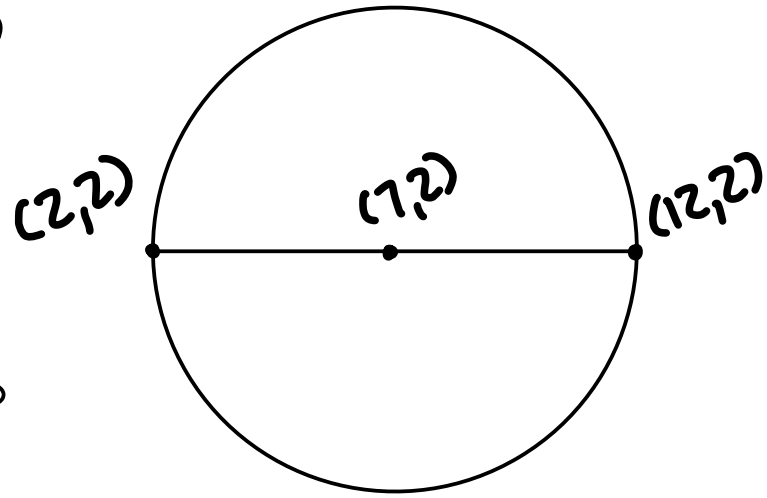
**Name** **MAT 231**
**Date** **Assessment# 1**

10. Write the standard form of the equation of the circle with the given characteristics.

Endpoints of a diameter: (2, 2), (12, 2)

$x_1 y_1 \quad x_2 y_2$

$$\frac{2-2}{12-2} = \frac{0}{10}$$




$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$(12-2)^2 + (2-2)^2$

$(10)^2 + (0)^2$

$\sqrt{100} = 10 \Rightarrow$ diameter $= 10$

$r = 5$

midpoint $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$\frac{2+12}{2}, \frac{2+2}{2}$

$7, 2$ = midpoint

$\sqrt{(x-7)^2+(y-2)^2} = 5$