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Date 4.3.23

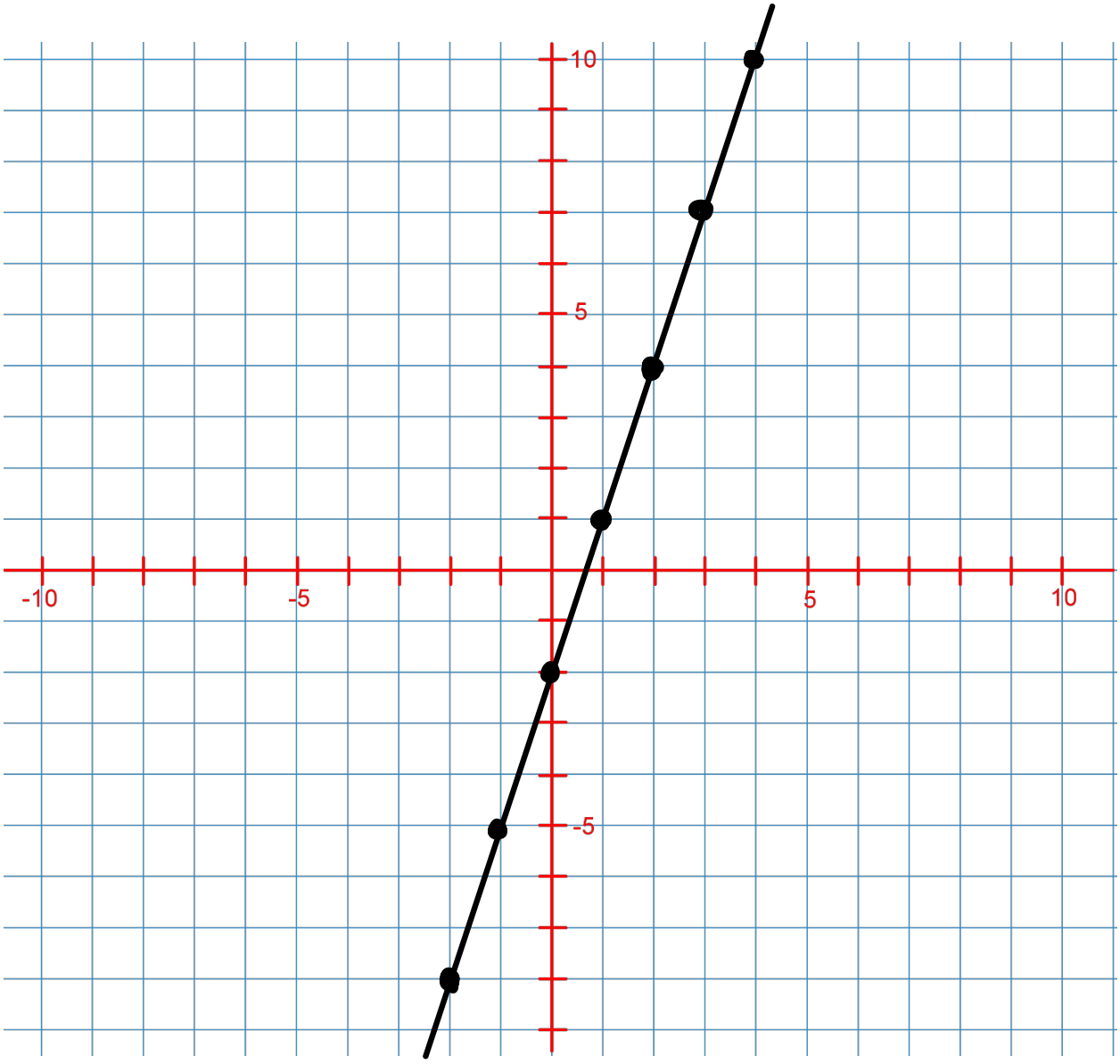
MAT 231
Assessment# 1

x	y
-1	-4
0	-2
1	1
2	4
3	7
4	10
-3	-8
-2	-5

Assessment# 1 –Chapter Sections 1.1 to 1.3

Directions: Provide complete responses to each question.

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



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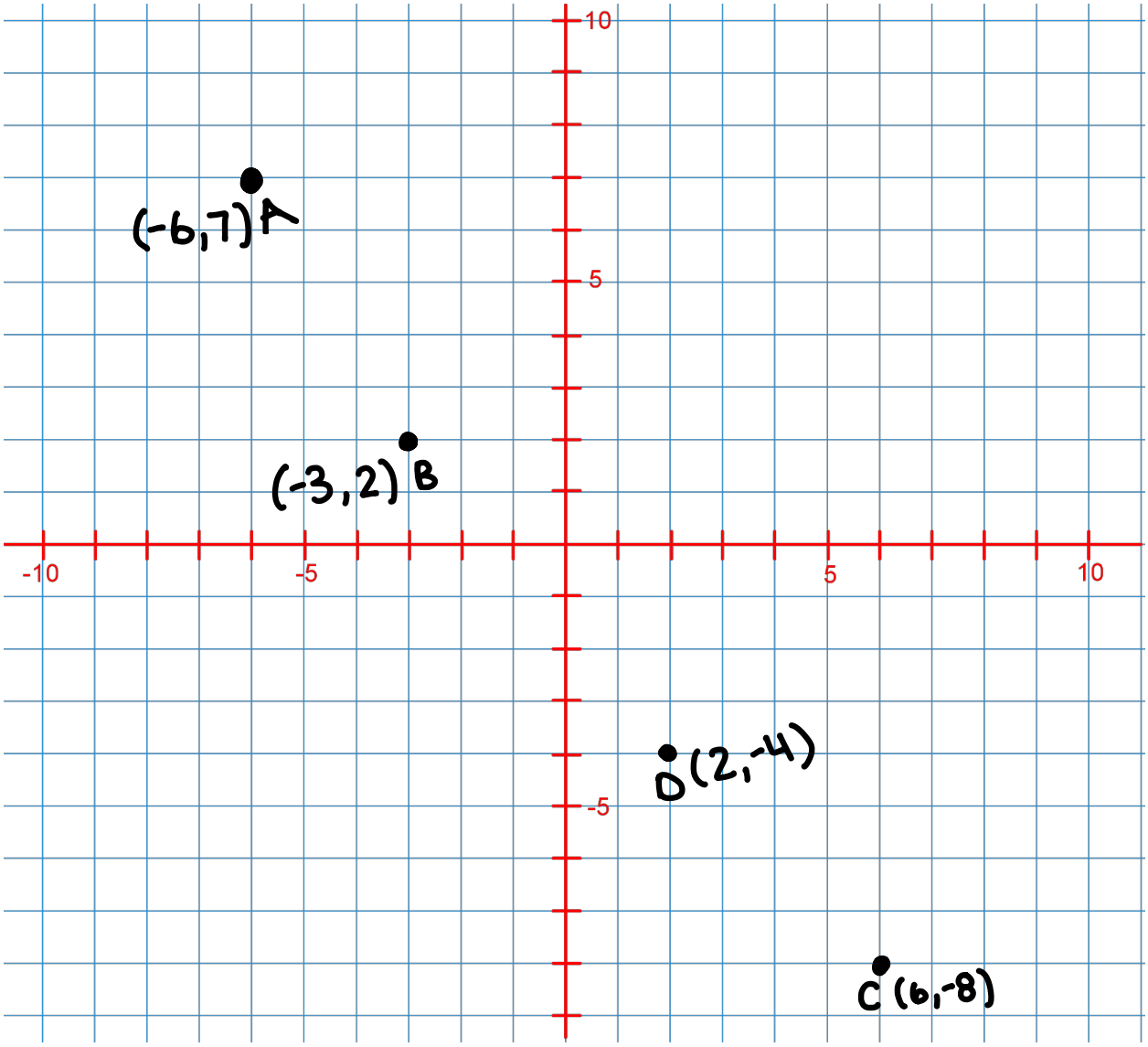
2. Find the coordinates of the following points and plot each point:
   a. A point is located six units to the left of the *y*-axis and seven units above the *x*-axis.
   b. A point is located three units to the left of the *y*-axis and two units above the *x*-axis.
   c. A point is located six units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



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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: I + IV

   d. $x > 2$ and $y < 1$
      Quadrant: IV

4. . Find the distance and the midpoint for the following points.
   a. (–4, –1), (–2, 3)

$\sqrt{(-2-(-4))^2+(3+1)^2}$

$\sqrt{2^2+4^2} = 2\sqrt{5}$

Distance
4.47
Midpoint
(-3, 1)

   b. (6, –2), (2, 4)

$\sqrt{(2-6)^2+(4+2)^2}$

$\sqrt{(-4)^2+(16)^2}$

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

Distance
7.21 m
Midpoint
(4, 1)

   c. (–6, –1), (–1, 6)

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

$\sqrt{74} = 8.6023m$

Distance
8.60m
Midpoint
$(-\frac{1}{2}, \frac{5}{2})$

   d. (5, 4), (4, 5)

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

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

$\sqrt{2}$

Distance
1.41 m
Midpoint
$(\frac{9}{2}, \frac{9}{2})$

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?

A = (0,4)
3 units ↑
A = (0,2)
6 units ←
A = (-6,7)
5 units ↓
A = (-6,2)
4 units →
A = (-2,2)

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-intercept: (–3, 0)
y-intercept: (0, 8)

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

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

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

$$\frac{6+2}{-6-6} = \frac{8}{-12} = \frac{-2}{3}$$

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

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

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

$$(x-h)^2 + (y-2)^2 = r^2$$

(center h,k)

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

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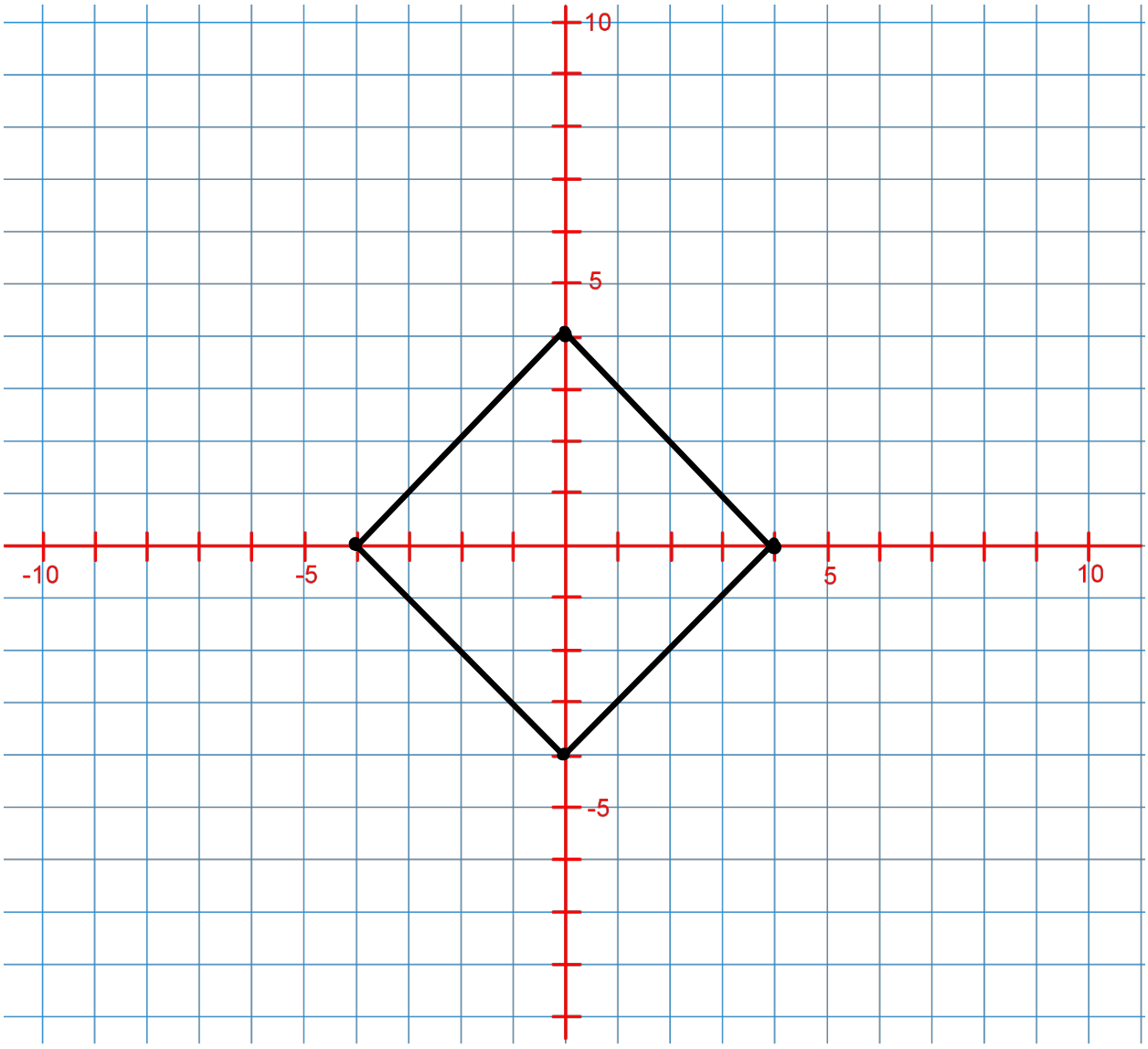
9. Find the center and radius of the circle, and sketch its graph.

$x^2+y^2=16$



$x^2+y^2=16$

center = (0,0)

radius = 4

intesepts = (±4,0)(0±4)

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

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

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

$$(7,2)$$

$$(x-7)^2+(y-2)^2=r^2$$

$$(-5)^2+(0)^2=r^2$$

$$25+0=r^2$$

$$r^2=25$$

$$r=5$$

$$=\underline{(x-7)^2+(4-2)^2=25}$$