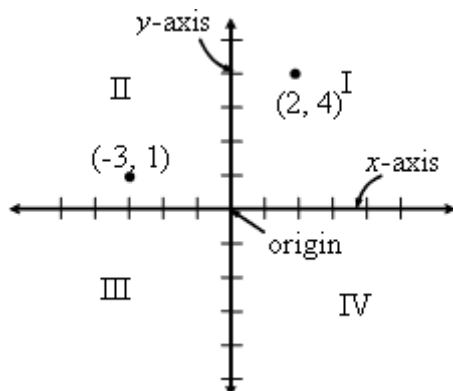# Mth 096 – Beginning Algebra – **Practice Exam 3 Solutions**

1.

2.

$2x + 3y + 12 = 0$

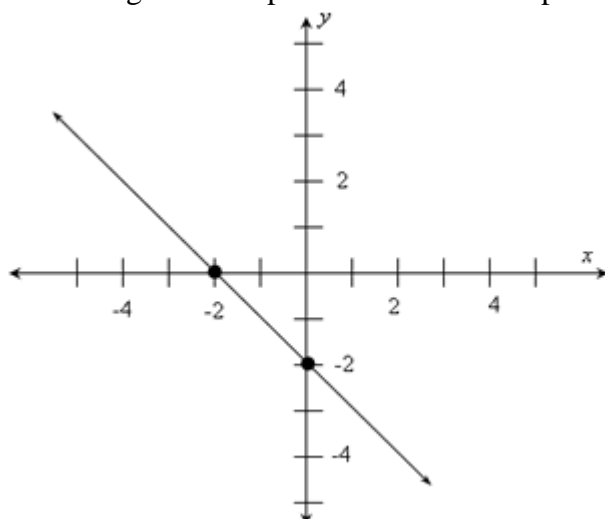| x	y
0	-4
-6	0
3	-6
-3	-2

Find these answers by substituting the given value into the equation and solving for the unknown.

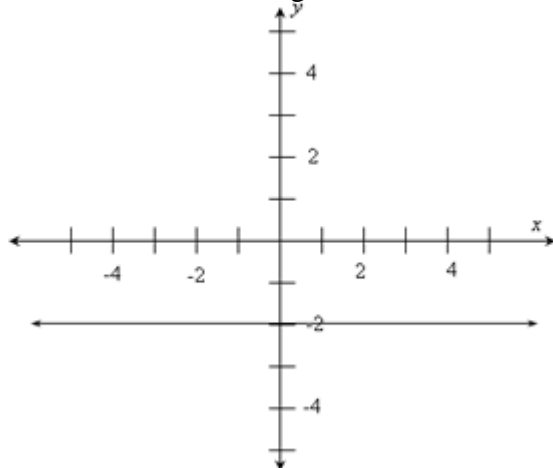3. If $x = 0$, $y + 3(0) = -6$ $\Rightarrow$ $y = -6$, so the y-intercept is $(0, -6)$.

   If $y = 0$, $0 + 3x = -6$ $\Rightarrow$ $3x = -6$ $\Rightarrow$ $x = -2$, so the x-intercept is $(-2, 0)$.

Sketch the graph of the following equations. Be sure to clearly label your graphs.
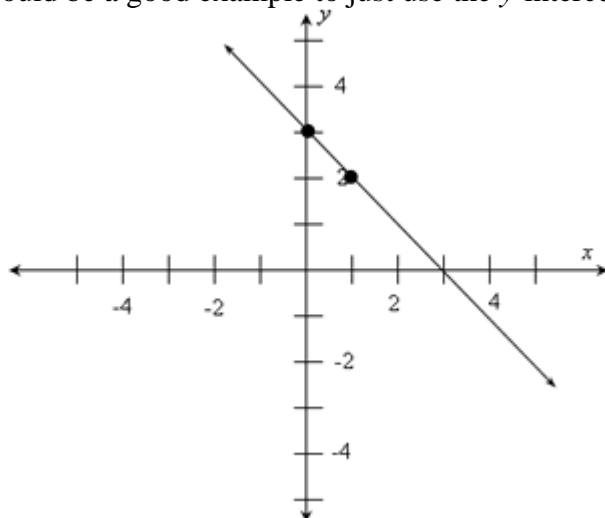
4. This would be a good example to find the intercepts. They are $(0, -2)$ and $(-2, 0)$.

5. This is a horizontal line through -2.
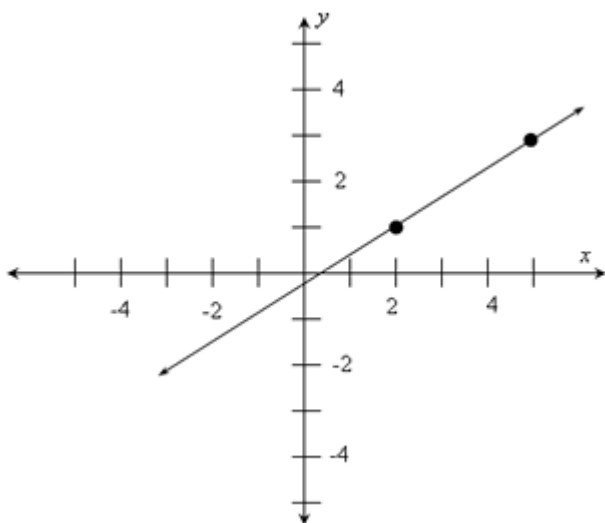

6. This would be a good example to just use the *y*-intercept and slope.

7. $m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{4 - (-2)}{1 - 2} = \dfrac{6}{-1} = -6$

8. Since slope $= \dfrac{\text{rise}}{\text{run}}$, $m = \dfrac{5}{8}$

9.

10.
$$y - y_1 = m(x - x_1)$$
$$y - (-3) = 2(x - 3)$$
$$y + 3 = 2(x - 3)$$

11. We can use $y - y_1 = m(x - x_1)$ again, but we first need to find the slope.
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 5}{3 - 1} = \frac{6}{2} = 3$$
$$y - y_1 = m(x - x_1) \quad \Rightarrow \quad y - 5 = 3(x - 1)$$

12. Lines with no slope are vertical lines, which are always of the form $x = c$. Since this line goes through the point $(3,5)$, the equation is $x = 3$.

13. The slope of this line is -3.

14. Parallel lines have the same slope, so we need to determine the slope of both lines. The slope of $y = x + 3$ is easily found – it is 1. To find the slope of $x + 2y = 4$, we need to first get it in slope-intercept form.
$$x + 2y = 4 \quad \Rightarrow \quad 2y = -x + 4 \quad \Rightarrow \quad y = \frac{-x + 4}{2} = \frac{-x}{2} + \frac{4}{2} = -\tfrac{1}{2}x + 2$$
So the slope of $x + 2y = 4$ is -½. Clearly, they do not have the same slope and are thus <u>not parallel</u>.

15. This line has y-intercept $b = 0$ and slope $m = \dfrac{-4}{2} = -2$, so its equation is $y = -2x$

16. This is like finding the equation of a line between two points. Since Let x = height and y = ideal weight, we have two "points" $(62, 125)$ and $(66, 137)$. The slope between them is

$$m = \frac{137 - 125}{66 - 62} = \frac{12}{4} = 3,$$ so an equation for the line is:

$$y - y_1 = m(x - x_1)$$
$$y - 125 = 3(x - 62)$$
$$y - 125 = 3x - 186$$
$$y = 3x - 61$$