

Name

Key

**Directions**

Make sure that you write your solutions using the format discussed and illustrated during class. You should show your scratch work, but do it off to the side and box it off. Do not put any part of your actual solution in a box or circle.

1. Consider the line with equation  $7x + 2y = 14$ . Do each of the following.

- Write the equation in slope intercept form.
- State the slope and y-intercept of the line.
- Graph the line onto Figure 1.

$$7x + 2y = 14$$

$$7x + 2y - 7x = 14 - 7x$$

$$2y = -7x + 14$$

$$\frac{2y}{2} = \frac{-7x + 14}{2}$$

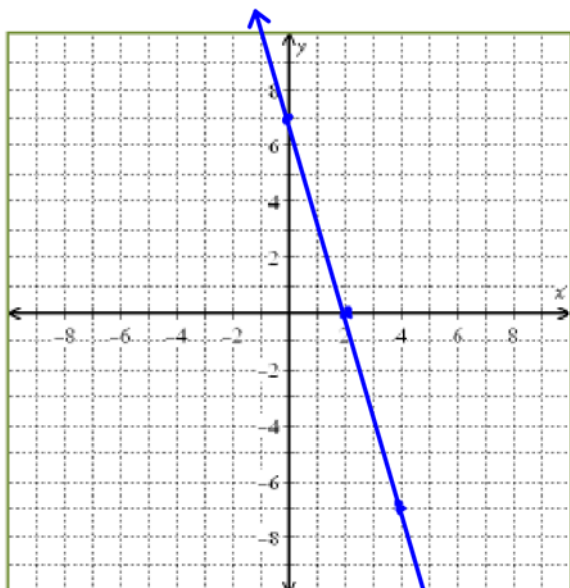


Figure 1

$$y = -\frac{7x}{2} + \frac{14}{2}$$

$$y = -\frac{7}{2}x + 7$$

The slope is  $-\frac{7}{2}$ .

The y-intercept is  $(0, 7)$

$(0, 7)$  and  $(2, 0)$

both check in

$$7x + 2y = 14$$

2. Use the point-slope equation to determine the equation of the line that passes through the point  $(-3, -2)$  with a slope of  $-8$ . State your conclusion with the equation written in slope-intercept form.

$$x_1 = -3$$

$$y_1 = -2$$

$$m = -8$$

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

$$y - (-2) = -8(x - (-3))$$

$$y + 2 = -8x - 24$$

$$y + 2 - 2 = -8x - 24 - 2$$

$$y = -8x - 26$$

The equation is  $y = -8x - 26$

3. Find the equation of the line in Figure 2. Show all necessary work and state your conclusion with the equation written in slope-intercept form. Please note that the  $y$ -intercept is not  $(0, 2)$ .

$$m = \frac{\text{rise}}{\text{run}} = \frac{5}{7}$$

The equation is  $y = \frac{5}{7}x + b$   
for some value of  $b$ .

Using  $x = 2, y = 4 \dots$

$$4 = \frac{5}{7}(2) + b$$

$$4 = \frac{15}{7} + b$$

$$4 - \frac{15}{7} = \frac{15}{7} + b - \frac{15}{7}$$

$$\frac{13}{7} = b$$

The equation is  $y = \frac{5}{7}x + \frac{13}{7}$

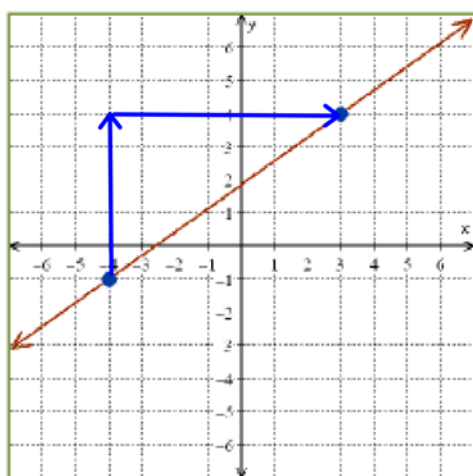


Figure 2

check  $(-4, -1)$

$$-1 = \frac{5}{7}(-4) + \frac{13}{7}?$$

$$-1 = \frac{-20 + 13}{7} \checkmark$$