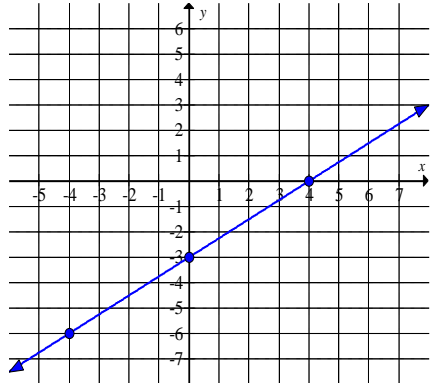


Review for Test 3 Answers

For each of the graphing problems, choose an appropriate scale so that key points show up on your grid. Plot a **MINIMUM** of three points and extend your line across your entire grid, using a straight edge. Make sure to label and scale the axes!

1. Plot $3x - 4y = 12$.



x -intercept

$$3x - 4(0) = 12$$

$$x = 4$$

$$(4, 0)$$

y -intercept

$$3(0) - 4y = 12$$

$$y = -3$$

$$(0, -3)$$

Check point

$$3(-4) - 4y = 12$$

$$-12 - 4y = 12$$

$$-12 - 4y + 12 = 12 + 12$$

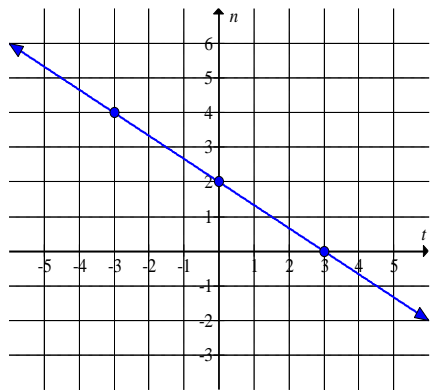
$$-4y = 24$$

$$\frac{-4y}{-4} = \frac{24}{-4}$$

$$y = -6$$

$$(-4, -6)$$

2. Plot $2t + 3n = 6$.



t -intercept

$$2t + 3(0) = 6$$

$$t = 3$$

$$(3, 0)$$

n -intercept

$$2(0) + 3n = 6$$

$$n = 2$$

$$(0, 2)$$

Check point

$$2(-3) + 3n = 6$$

$$-6 + 3n = 6$$

$$-6 + 3n + 6 = 6 + 6$$

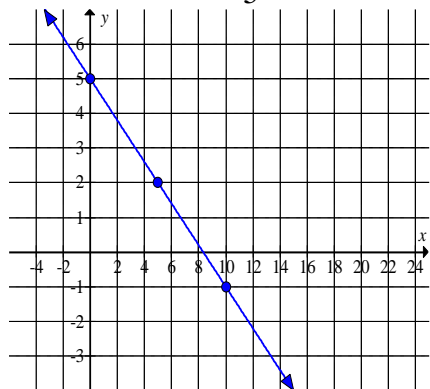
$$3n = 12$$

$$\frac{3n}{3} = \frac{12}{3}$$

$$n = 4$$

$$(-3, 4)$$

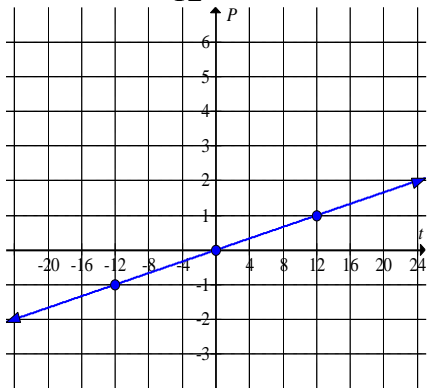
3. Plot $y = -\frac{3}{5}x + 5$.



$$m = -\frac{3}{5}$$

$$y\text{-intercept: } (0, 5)$$

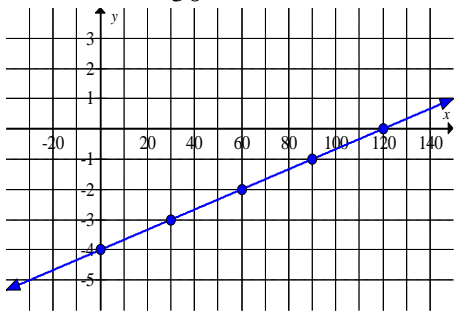
4. Plot $P = \frac{t}{12}$.



$$m = \frac{1}{12}$$

P -intercept: $(0,0)$

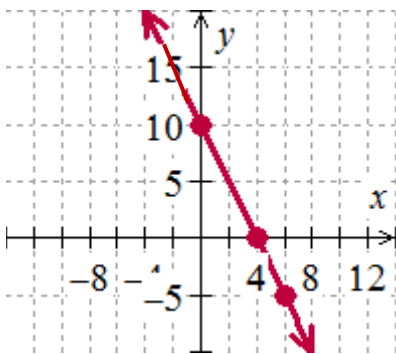
5. Plot $y = \frac{x}{30} - 4$.



$$m = \frac{1}{30}$$

y -intercept: $(0,-4)$

6. Plot $35x + 14y = 140$.



x -intercept

$$35x + 14(0) = 140$$

$$x = 4$$

$(4,0)$

y -intercept

$$35(0) + 14y = 140$$

$$y = 10$$

$(0,10)$

Check point

$$35(6) + 14y = 140$$

$$210 + 14y = 140$$

$$210 + 14y - 210 = 140 - 210$$

$$14y = -70$$

$$\frac{14y}{14} = \frac{-70}{14}$$

$$y = -5$$

$(6,-5)$

7. Find the slope of the line passing through the points $(2,5)$ and $(1,-4)$.

$$\begin{aligned}m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-4 - 5}{1 - 2} \\ &= \frac{-9}{-1} \\ &= 9\end{aligned}$$

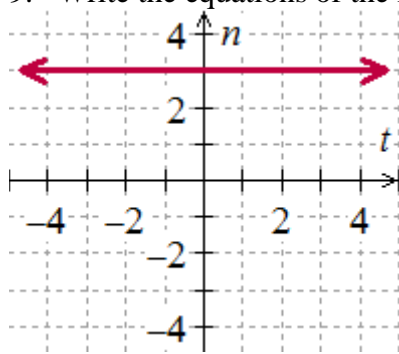
The slope is 9.

8. Find the slope of the line passing through the points $(4,-7)$ and $(-3,2)$.

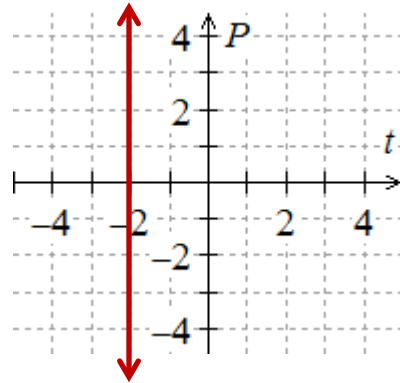
$$\begin{aligned}m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{2 - (-7)}{-3 - 4} \\ &= \frac{2 + 7}{-7} \\ &= -\frac{9}{7}\end{aligned}$$

The slope is $-\frac{9}{7}$.

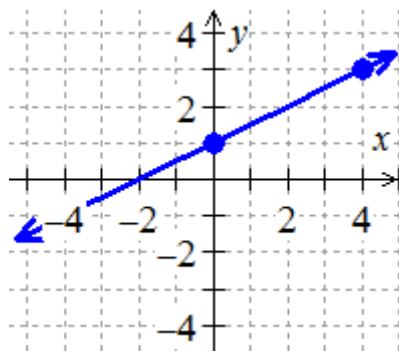
9. Write the equations of the following lines.



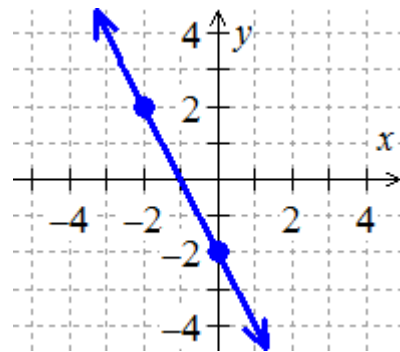
$$n = 3$$



$$t = -2$$



$$y = \frac{1}{2}x + 1$$



$$y = -2x - 2$$

10. a. Figure 1 represents the cost to rent a car. What is the vertical-intercept of the line in Figure 1?

The vertical intercept is $(0,40)$.

- b. What does the vertical-intercept mean in practical terms?

This tells us that with 0 miles driven, the cost to rent a car at Dandy's car rental is \$40. So \$40 is the base charge.

- c. What is the slope of the line in Figure 1? Don't forget the unit. Slopes in applied problems have units.

The slope is $\frac{1 \text{ dollar}}{2 \text{ mile}}$.

- d. What does the slope mean in practical terms?

The slope tells us the cost to rent the car is increasing at a rate of $\frac{1 \text{ dollar}}{2 \text{ mile}}$.

The cost to rent the car is increasing at a rate of $50 \frac{\text{cents}}{\text{mile}}$.

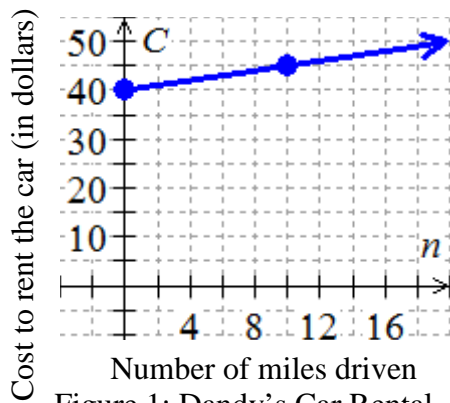


Figure 1: Dandy's Car Rental

11. Determine whether the lines through each pair of points are parallel, perpendicular, or neither.

$(0,1)$ and $(3,7)$

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{7 - 1}{3 - 0} \\ &= \frac{6}{3} \\ &= 2 \end{aligned}$$

$(1,1)$ and $(2,3)$

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{3 - 1}{2 - 1} \\ &= \frac{2}{1} \\ &= 2 \end{aligned}$$

The slopes are the same, so the lines are parallel.

12. What is the slope of a line that is perpendicular to the line with equation $5x - 3y = 7$?

$$5x - 3y = 7$$

$$5x - 3y - 5x = 7 - 5x$$

$$-3y = -5x + 7$$

$$\frac{-3y}{-3} = \frac{-5x + 7}{-3}$$

$$y = \frac{-5x}{-3} + \frac{7}{-3}$$

$$y = \frac{5}{3}x - \frac{7}{3}$$

The given line has slope $\frac{5}{3}$.

A perpendicular line has slope $-\frac{3}{5}$.

13. What is the slope and y-intercept of the line $4x - 2y = 6$?

$$4x - 2y = 6$$

$$4x - 2y - 4x = 6 - 4x$$

$$-2y = -4x + 6$$

$$\frac{-2y}{-2} = \frac{-4x + 6}{-2}$$

$$y = \frac{-4x}{-2} + \frac{6}{-2}$$

$$y = 2x - 3$$

The slope is 2.

The y-intercept is $(0, -3)$.

14. For the line with slope -3 and passing through the point $(-2, 3)$, write an equation of the line in point-slope form. Then write the equation of the line in slope-intercept form.

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

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

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

$$y - 3 = -3x - 6$$

$$y - 3 + 3 = -3x - 6 + 3$$

$$y = -3x - 3$$

15. For the line passing through the points $(4, -3)$ and $(2, 5)$, write an equation of the line in point-slope form. Then write the equation of the line in slope-intercept form.

$(4, -3)$ and $(2, 5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{5 - (-3)}{2 - 4}$$

$$= \frac{5 + 3}{-2}$$

$$= \frac{8}{-2}$$

$$= -4$$

$$(x_1, y_1) = (2, 5), m = -4$$

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

$$y - 5 = -4(x - 2)$$

$$y - 5 = -4x + 8$$

$$y - 5 + 5 = -4x + 8 + 5$$

$$y = -4x + 13$$