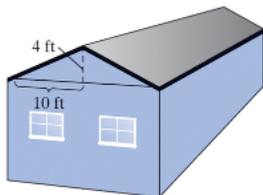


Linear Functions and their Graphs, part 2

1. Find the pitch (slope) of the roof in the figure, and describe its meaning.



2. Use the slope formula to determine the slope of the line containing the two points.

$(-2, 3), (1, -2)$

$(2, 3), (2, 7)$

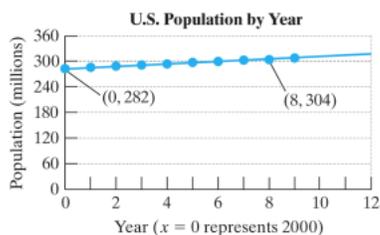
$(5, -1), (-3, -1)$

3. Can the slope of two perpendicular lines be positive? Why or why not?

4. Suppose a line is defined by the equation $x = 2$. What is the slope of a line that is perpendicular to this line? Hint: Sketch the lines.

5. The U.S. population (in millions) has grown approximately linearly since the year 2000. See the graph below.

- a. Find the slope of the line defined by the two given points.



- b. Interpret the meaning of the slope in the context of this problem.

6. Determine the slope and y -intercept of the given equations below, and use these to sketch a graph of each line.

$$y = \frac{2}{5}x - 1$$

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

7. Two lines L_1 and L_2 are defined below either by points or equations. Determine whether the two lines are parallel, perpendicular, or neither.

a. $L_1 : (-3, -5), (-1, 2)$ $L_2 : (0, 4), (7, 2)$

b. $L_1 : 3x - 4y = 12$ $L_2 : \frac{1}{2}x - \frac{2}{3}y = 1$

c. $L_1 : -y = 3x - 2$ $L_2 : -6x + 2y = 6$

8. Write the equation of the line satisfying the given conditions.

a. Line passes through the point $(2, 7)$ and has a slope of 2.

b. Line passes through the point $(1, 1)$ and $(3, 7)$.

c. Line passes through the point $(4, -2)$ and is perpendicular to the line $4x + 3y = -6$.