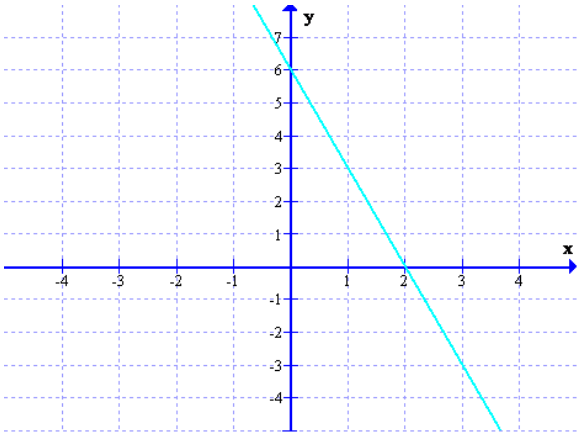
Section 3.1 Slope of a Line and Applications of Slope

1. What is the slope of the line shown in the graph below?



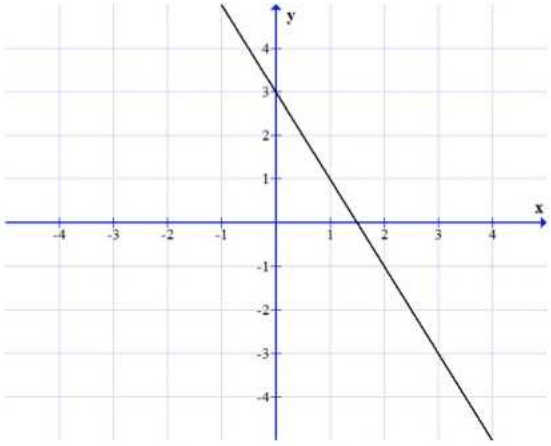
   (a) 3
   (b) -3
   (c) $\frac{1}{3}$
   (d) $-\frac{1}{3}$
   (e) This line has no slope.

2. What is the slope of the line that passes through the points $(0, 2)$ and $(-2, -4)$?

   (a) 1
   (b) -1
   (c) $\frac{1}{3}$
   (d) 3
   (e) Undefined

3. What is the slope of this line?

   (a) $\frac{1}{2}$
   (b) 2



(c) $\frac{-1}{2}$

(d) -2

4. Calculate the slope of the line through the points (4, -3) and (1, 3).

(a) 2

(b) -2

(c) $\frac{1}{2}$

(d) $\frac{-1}{2}$

5. Calculate the slope of the line through the points (6, -8) and (6, 2).

(a) 10

(b) $\frac{1}{10}$

(c) 0

(d) undefined

6. True or False: All vertical lines have slope 0.

(a) True, and I am very confident

(b) True, but I am not very confident

(c) False, but I am not very confident

(d) False, and I am very confident

7. What does this line look like $2x + 1 = 7$?

   (a) horizontal

   (b) vertical

   (c) up and to the right 

   (d) down and to the right 

8. Which of the following functions represents a linear function with slope 3 and y-intercept -4?

   (a) $y = -4x + 3$

   (b) $y = 3x - 4$

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

   (d) Both (a) and (b)

   (e) Both (b) and (c)

9. Which equation describes the linear function that has slope 3 and x-intercept 4?

   (a) $y = 3x + 4$

   (b) $y = 4x + 3$

   (c) $y = 3x - 12$

   (d) $y = 3x + 12$

10. The relationship between the latitude L of a city in the Northern Hemisphere and its average annual temperature T is modeled by the function $T = -0.68L + 89.5$. The slope of this linear function means

    (a) That temperature at the equator would be 89.5°.

    (b) For every degree increase in latitude the average annual temperature increases by 89.5°.

    (c) For every degree increase in latitude the average annual temperature increases by 0.68°.

    (d) For every degree increase in latitude the average annual temperature decreases by 0.68°.

11. The relationship between the latitude L of a city in the Northern Hemisphere and its average annual temperature T is modeled by the function $T = -0.68L + 89.5$. The vertical intercept of this linear function means

    (a) That temperature at the equator would be $89.5°$.

    (b) For every degree increase in latitude the average annual temperature increases by $89.5°$.

    (c) That temperature at the equator would be $-0.68°$.

    (d) For every degree increase in latitude the average annual temperature decreases by $0.68°$.

12. Which equation describes a line that is parallel to the graph of $y = -2x + 4$?

    (a) $y = \frac{1}{2}x - 3$

    (b) $y = 2x - 3$

    (c) $y = \frac{1}{2}x + 4$

    (d) $y = -\frac{1}{2}x - 3$

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

13. Are the given lines parallel, perpendicular, or neither?
    Line 1: $2x + 4y = 12$
    Line 2: $2x - x = 4$

    (a) parallel

    (b) perpendicular

    (c) neither

14. Which equation describes a line that is perpendicular to the graph of $y = -2x + 4$?

    (a) $y = -\frac{1}{2}x - 3$

    (b) $y = 2x - 3$

    (c) $y = -\frac{1}{2}x + 4$

    (d) $y = \frac{1}{2}x - 3$

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

15. Find the equation of the line that passes through the point $(1, 4)$ and is perpendicular to the line given by $3x - 2y = 6$.

(a) $y = \frac{3}{2}x + \frac{5}{2}$

(b) $y = \frac{3}{2}x - \frac{11}{2}$

(c) $y = -\frac{2}{3}x + \frac{14}{3}$

(d) $y = -\frac{2}{3}x - \frac{10}{3}$