

NonLinear

1.

x	0	2	4	6
y	-8	-3	3	7

x = constant

y = Not constant

Function = input for exactly one output

Linear

2.

x	0	1	2	3
y	-4	-2	0	2

Both constant

Function = one input to one output

$$3. 2y - 4 = 10$$

Linear = $2y - 4 = 10$ can be written
in slope-form

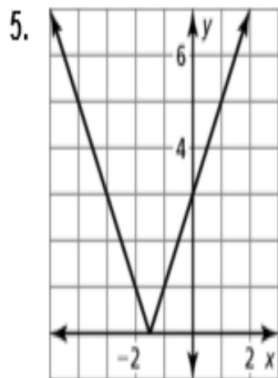
Function = will make a horz. line
which will only cross on the
y-axis one time

$$4. 2xy = -8$$

Nonlinear = can not write in slope
Form

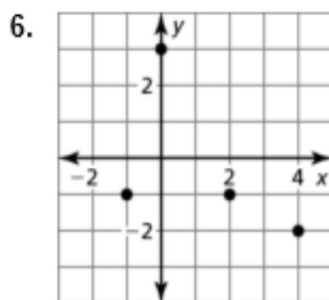
Function = 1 input to one output

$D = \text{all real \#}'s$



$R = y \geq 0$
continuous

$D = -1, 0, 2, 4$



$R = -2, -1, 3$

Discrete

Evaluate the function when $x = -3, -2,$ and $1.$

7. $g(x) = -x^2 - 7$

8. $h(x) = |-2x - 6|$

9. $f(x) = \frac{1}{2}x - 1$

$$\begin{aligned} -(-3)^2 - 7 \\ -9 - 7 = -16 \end{aligned}$$

$$\begin{aligned} |-2(-3) - 6| \\ |6 - 6| = 0 \end{aligned}$$

$$\begin{aligned} \frac{1}{2}(-3) - 1 &= -\frac{3}{2} - 1 \\ &= -2\frac{1}{2} \end{aligned}$$

$$\begin{aligned} -(-2)^2 - 7 \\ -4 - 7 = -11 \end{aligned}$$

$$\begin{aligned} |-2(-2) - 6| \\ |4 - 6| = |-2| = 2 \end{aligned}$$

$$\begin{aligned} \frac{1}{2}(-2) - 1 \\ -1 - 1 = -2 \end{aligned}$$

$$\begin{aligned} -(1)^2 - 7 \\ -1 - 7 = -8 \end{aligned}$$

$$\begin{aligned} |-2(1) - 6| \\ |-2 - 6| = |-8| = 8 \end{aligned}$$

$$\begin{aligned} \frac{1}{2}(1) - 1 \\ = -\frac{1}{2} \end{aligned}$$

10. $j(x) = 3 - x; j(x) = -5$

11. $t(x) = 2x - 4; t(x) = \frac{1}{2}$

$$\begin{aligned} -5 &= 3 - x \\ -3 &-3 \end{aligned}$$

$$\frac{-8}{-1} = \frac{-x}{-1}$$

$$8 = x$$

$$\begin{aligned} \frac{1}{2} &= 2x - 4 \\ +4 &\quad +4 \end{aligned}$$

$$\frac{4\frac{1}{2}}{2} = \frac{2x}{2}$$

$$9\frac{1}{4} = x$$

$$12. m(x) = -\frac{2}{3}x + 8; m(x) = 2$$

$$13. k(x) = \frac{3}{2}x - 1; k(x) = -4$$

$$2 = -\frac{2}{3}x + 8$$

$$-8$$

$$-6 = -\frac{2}{3}x$$

$$-\frac{2}{3}x = -6 \times \frac{3}{2}$$

$$x = \frac{18}{2} =$$

$$x = 9$$

$$-4 = \frac{3}{2}x - 1$$

$$+1$$

$$-3 = \frac{3}{2}x$$

$$\frac{3}{2}x = -3 \times \frac{2}{3}$$

$$x = \frac{-6}{3}$$

$$x = -2$$

Find the x- and y-intercepts of the graph of the linear equation.

$$14. 2x - 3y = -10$$

$$15. 2x + 5y = -8$$

$$16. -4 - x = 14 - 3y$$

$$2(0) - 3y = -10$$

$$\frac{-3y}{-3} = \frac{-10}{-3}$$

$$y = 10/3 \quad x = 0$$

$$2x - 3(0) = -10$$

$$2x = \frac{-10}{2}$$

$$x = -5 \quad y = 0$$

$$2(0) + 5y = -8$$

$$5y = \frac{-8}{5}$$

$$y = -8/5 \quad x = 0$$

$$2x + 5(0) = -8$$

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

$$x = -4 \quad y = 0$$

$$-4 - 0 = 14 - 3y$$

$$-4 = 14 - 3y$$

$$-14$$

$$\frac{-18}{-3} = \frac{-3y}{-3}$$

$$6 = y \quad x = 0$$

$$6 = y \quad x = 0$$

$$-4 - x = 14 - 3(0)$$

$$-4 - x = 14$$

$$-x = 18$$

$$\frac{-18}{-1} x = -18$$

$$y = 0$$

$$2x - 3y = 9$$

$$\frac{-3y}{-3} = \frac{-2x + 9}{-3}$$

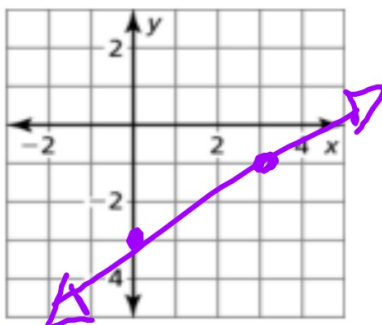
$$y = \frac{2}{3}x - 3$$

↑ ↑
Slope y-int

Slope

Graph the linear equation.

17. $2x - 3y = 9$



18. $-2y - 4 = 4$

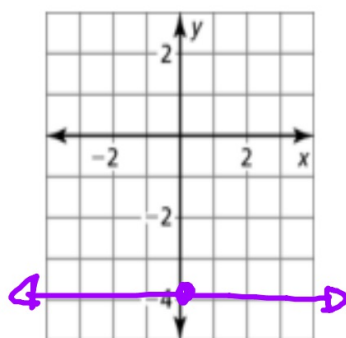
$$-2y - 4 = 4$$

$$-2y = 8$$

$$y = -4$$

No slope (0)

y-int = -4



The points represented by the table lie on a line. Find the slope of the line.

19.

x	1	-4	-3	2
y	3	3	3	3

$= 0$

$$m = 0$$

20.

x	1	3	7	-1
y	-1	2	8	-4

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

$$\frac{\text{Change } y}{\text{Change } x} = \frac{-1 - 2}{1 - 3} = \frac{-3}{-2}$$

$$m = \frac{3}{2}$$

21. The function $c = 100 + 0.30m$ represents the cost c (in dollars) of renting a car after driving m miles.

a. Identify the independent and dependent variables.

m (miles)

b. What would the cost be to rent the car and drive 100 miles?

$$c = 100 + 0.30(100) \quad c = \$130$$

c. How many miles would a customer have to drive for the cost to be \$149.50?

$$149.50 = \cancel{100} + 0.30m$$
$$-100 \quad -100$$

$$\frac{49.50}{.30} = \frac{0.30m}{.30}$$

$$165 = \text{miles}$$

Identify the slope, y-intercept, and x-intercept of the graph of the linear equation.

22. $y = -x + 3$

Slope = $-\frac{1}{1}$

y-int = 3

$x = 0 = -x + 3$

-3

$\frac{-3}{-1} = \frac{-x}{-1}$

$3 = x$

23. $4x - 6y = 14$

$4x - 6y = 14$

$\frac{-6y}{-6} = \frac{-4x + 14}{-6}$

$y = -\frac{4}{6}x + \frac{7}{3}$

Slope = $\frac{2}{3}$

y-int = $\frac{7}{3}$

x-int =

$4x - 6(0) = 14$

$4x = \frac{14}{4}$

$x = \frac{7}{2}$

24. $3y + 4 = -10$

$3y + 4 = -10$

$3y = -\frac{14}{3}$

$y = -\frac{14}{9}$

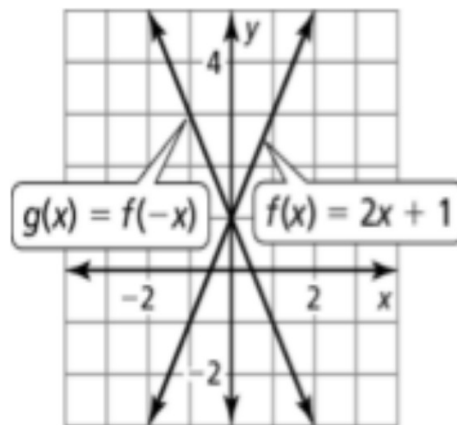
slope = 0

No: x-int

$f(x) = 2x + 1$

$g(x) = f(-x)$

25.



Reflection

$$26. f(x) = 2x - 4; g(x) = \frac{1}{2}f(x)$$

Vertical Shrink

Scale factor of $\frac{1}{2}$