

Things to Know from 3.3

- Write a relationship between x- and y-values, and write the equation.
- Evaluate a function for given input values.
- Find reasonable domain and range.

Determine a relationship between the x and y values. Write an equation.

1.

x	1	2	3	4
y	-6	-5	-4	-3

$$y = x - 7$$

2.

x	1	2	3	4
y	-3	-6	-9	-12

$$y = -3x$$

3. A printer can print 8 pages per minute. Identify the dependent and independent variables for the situation. Write an equation in function notation.

Dependent: # of pages

Independent: # of minutes

Equation: $y = 8x$

How many pages can the printer print in 12 minutes? 96 pages

$$y = 8(12) = 96$$

Evaluate each function for the given input values.

3. For $f(x) = 3x - 1$, find $f(x)$ when $x = 2$

$$\begin{aligned} f(2) &= 3(2) - 1 \\ &= 6 - 1 \\ f(2) &= 5 \end{aligned}$$

4. For $g(x) = x^2 - x$, find $g(x)$ when $x = -2$

$$\begin{aligned} g(-2) &= (-2)^2 - (-2) \\ &= 4 + 2 \\ g(-2) &= 6 \end{aligned}$$

Find the range for the following domain: $D = \{-3, -2, -1, 0, 1\}$

5. $f(x) = -2 - x$

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

$$\begin{aligned} f(-2) &= -2 - (-2) \\ &= -2 + 2 \\ &= 0 \end{aligned}$$

$$\begin{aligned} f(-1) &= -2 - (-1) \\ &= -2 + 1 \\ &= -1 \end{aligned}$$

$$\begin{aligned} f(0) &= -2 - 0 \\ &= -2 \end{aligned}$$

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

Range: $\{-3, -2, -1, 0, 1\}$

Write a function to describe the situation. Find a reasonable domain and range for up to 5 poses.

6. A photographer charges a sitting fee of \$15 plus \$3 for each pose.

Domain: $\{0, 1, 2, 3, 4, 5\}$

Range: $\{15, 18, 21, 24, 27, 30\}$

Equation: $f(x) = 15 + 3x$

How much would the photographer charge for 6 poses? \$ 33

Things to Know from 3.4

- Graph functions for a given domain (you may need to solve for y)
- Graph functions for an unrestricted domain.

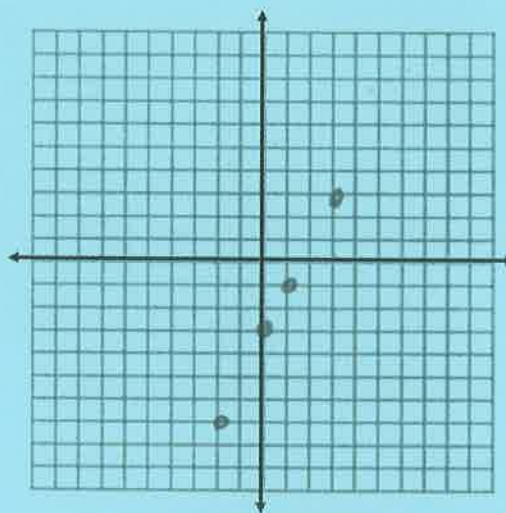
Graph each function for the given domain. You may need to solve for y first.

1. $2x - y = 3$ $D: \{-2, 0, 1, 3\}$

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

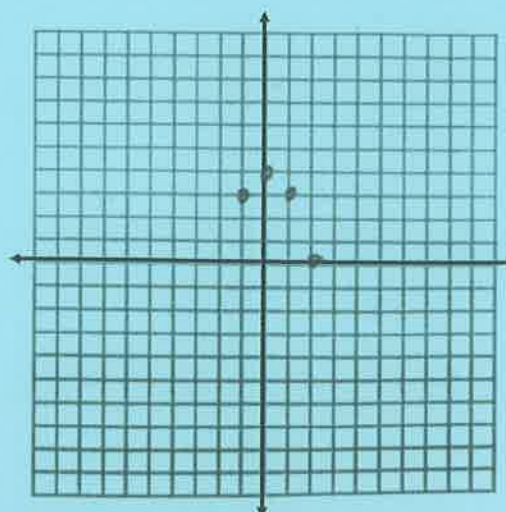
$y = 2x - 3$

x	$2x - 3$	y
-2	$2(-2) - 3$	-7
0	$2(0) - 3$	-3
1	$2(1) - 3$	-1
3	$2(3) - 3$	3



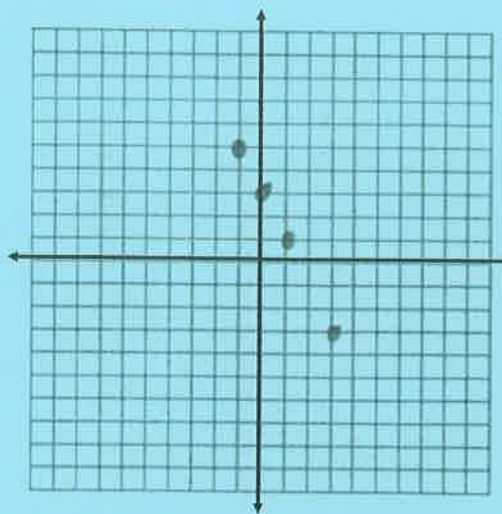
2. $y = 4 - x^2$ $D: \{-1, 0, 1, 2\}$

x	$4 - x^2$	y
-1	$4 - (-1)^2$	3
0	$4 - (0)^2$	4
1	$4 - (1)^2$	3
2	$4 - (2)^2$	0



3. $y = 3 - 2x$ $D: \{-1, 0, 1, 3\}$

x	$3 - 2x$	y
-1	$3 - 2(-1)$	5
0	$3 - 2(0)$	3
1	$3 - 2(1)$	1
3	$3 - 2(3)$	-3



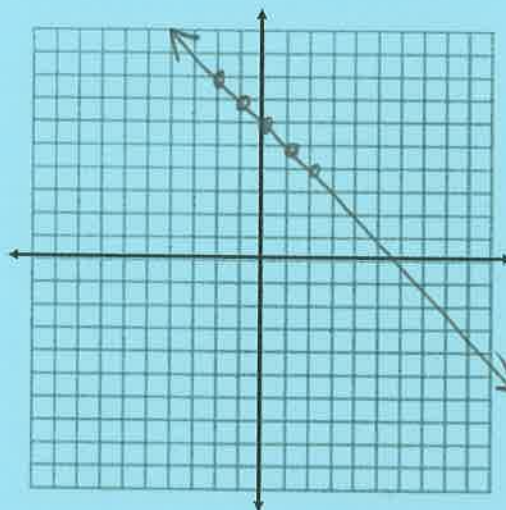
Graph each function.

1. $x + y = 6$

$y = -x + 6$

*line

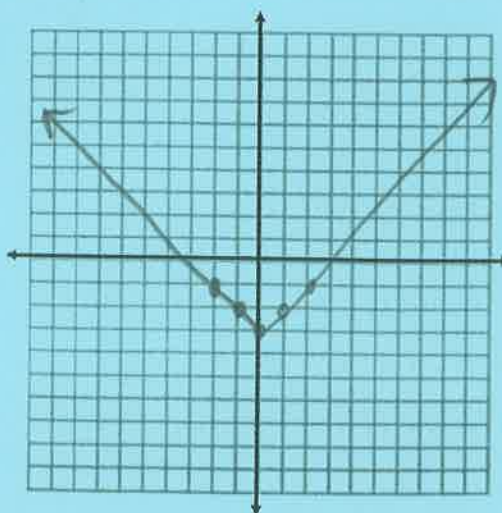
x	$-x + 6$	y
-2	$-(-2) + 6$	8
-1	$-(-1) + 6$	7
0	$-(0) + 6$	6
1	$-(1) + 6$	5
2	$-(2) + 6$	4



2. $y = |x| - 3$

*v-shape

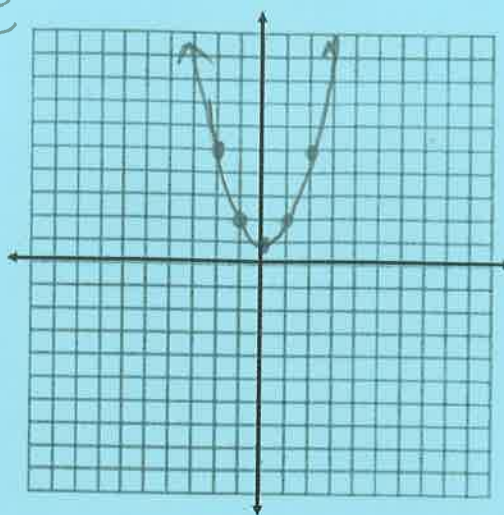
x	$ x - 3$	y
-2	$ -2 - 3 = 2 - 3$	-1
-1	$ -1 - 3 = 1 - 3$	-2
0	$ 0 - 3 = 0 - 3$	-3
1	$ 1 - 3 = 1 - 3$	-2
2	$ 2 - 3 = 2 - 3$	-1



3. $y = x^2 + 1$

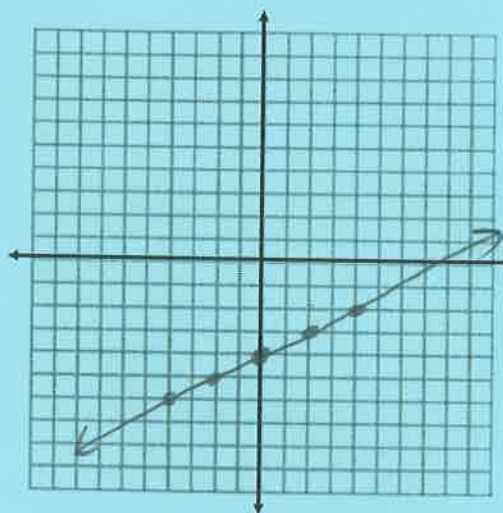
* U-shape

x	$x^2 + 1$	y
-2	$(-2)^2 + 1 = 4 + 1$	5
-1	$(-1)^2 + 1 = 1 + 1$	2
0	$(0)^2 + 1 = 0 + 1$	1
1	$(1)^2 + 1 = 1 + 1$	2
2	$(2)^2 + 1 = 4 + 1$	5



4. $y = \frac{1}{2}x - 4$

x	$y = \frac{1}{2}x - 4$	y
-4	$\frac{1}{2}(-4) - 4 = -2 - 4$	-6
-2	$\frac{1}{2}(-2) - 4 = -1 - 4$	-5
0	$\frac{1}{2}(0) - 4 = 0 - 4$	-4
2	$\frac{1}{2}(2) - 4 = 1 - 4$	-3
4	$\frac{1}{2}(4) - 4 = 2 - 4$	-2



5. $2x - 3y = 6$

$-2x \quad -2x$

$$\begin{array}{r} -3y = -2x + 6 \\ \underline{-3} \quad \underline{-3} \quad \underline{-3} \end{array}$$

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

* choose multiples of 3

x	$y = \frac{2}{3}x - 2$	y
-6	$\frac{2}{3}(-6) - 2 = -4 - 2$	-6
-3	$\frac{2}{3}(-3) - 2 = -2 - 2$	-4
0	$\frac{2}{3}(0) - 2 = 0 - 2$	-2
3	$\frac{2}{3}(3) - 2 = 2 - 2$	0
6	$\frac{2}{3}(6) - 2 = 4 - 2$	2

