

What Are Functions?

1 Fill in the blank.

The input set of a function is called the _____ and the output set is called the _____

2 True or False?

Functions aren't allowed to have "one-to-many" relations.

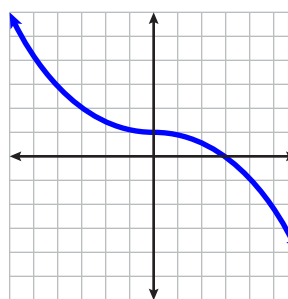
True False

3 Complete this function table.

$$y = 2x - 1$$

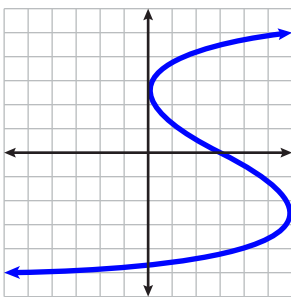
Input x	Output y
3	5
2	
1	
0	
-1	

4 Is this a function?
(Hint: Use the vertical line test.)



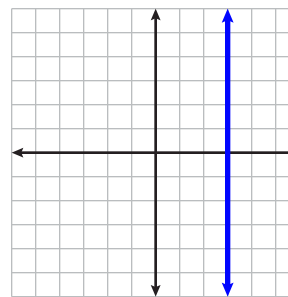
Yes
 No

5 Is this a function?
(Hint: Use the vertical line test.)



Yes
 No

6 Is this a function?
(Hint: Use the vertical line test.)



Yes
 No

7 Evaluate.

Let $f(x) = x^2 + 1$
What is $f(3)$?

8 Evaluate.

Let $f(x) = x^2 + 3x$
What is $f(-1)$?

What Are Functions?

1 Fill in the blank.

The input set of a function is called the domain and the output set is called the range

2 True or False?

Functions aren't allowed to have "one-to-many" relations.

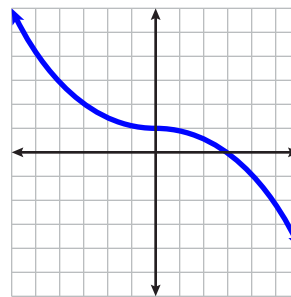
True False

3 Complete this function table.

$$y = 2x - 1$$

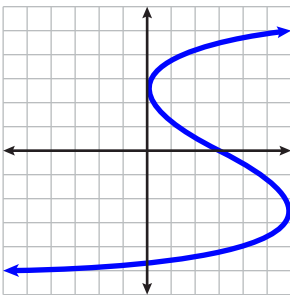
Input x	Output y
3	5
2	3
1	1
0	-1
-1	-3

4 Is this a function?
(Hint: Use the vertical line test.)



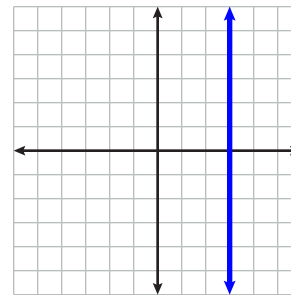
Yes
 No

5 Is this a function?
(Hint: Use the vertical line test.)



Yes
 No

6 Is this a function?
(Hint: Use the vertical line test.)



Yes
 No

7 Evaluate.

Let $f(x) = x^2 + 1$
What is $f(3)$?

$$\begin{aligned} f(3) &= 3^2 + 1 \\ &= 9 + 1 \\ &= 10 \end{aligned}$$

8 Evaluate.

Let $f(x) = x^2 + 3x$
What is $f(-1)$?

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

Function Tables

AB-WAF 1

Instructions: Complete each Function Table by calculating the output 'y' (or f(x)) for each input value 'x'.

1

$$y = 3x$$

Input x	Output y
0	
1	
2	6
3	
4	

2

$$f(x) = x + 2$$

Input x	Output f(x)
-2	
-1	
0	2
1	
2	

3

$$y = 2x - 3$$

Input x	Output y
2	
4	5
6	
8	
10	

4

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

Input x	Output f(x)
-2	-7
-1	
0	
1	
2	

5

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

Input x	Output y
-10	
-4	-2
0	
4	
10	

6

$$f(x) = \frac{x}{2} + 3$$

Input x	Output f(x)
-8	-1
-6	
-4	
-2	
0	

Function Tables & Graphs

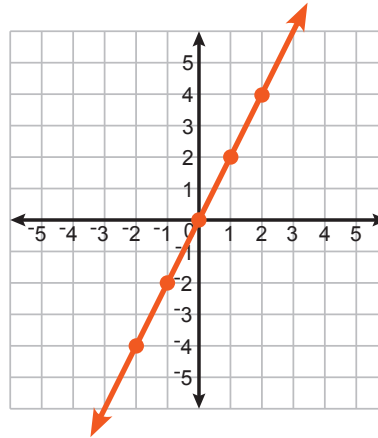
AB-WAF 2

Instructions: Complete each Function Table and then graph the function. Remember that each row of the function table forms an ordered pair (x, y).

1

$$y = 2x$$

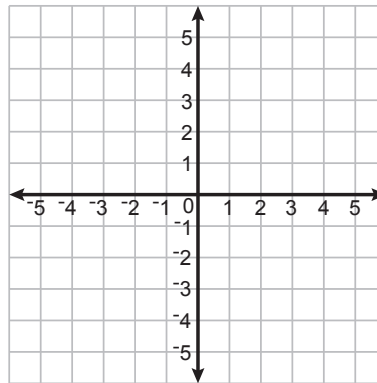
Input x	Output y
-2	-4
-1	-2
0	0
1	2
2	4



2

$$y = x - 2$$

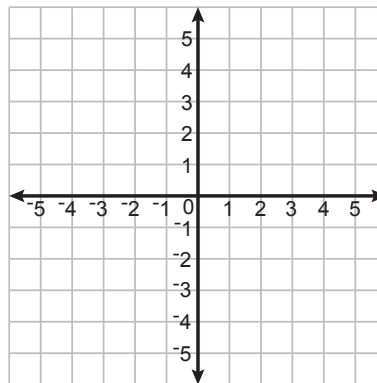
Input x	Output y
-2	
0	
2	
4	
6	



3

$$y = x^2$$

Input x	Output y
-2	
-1	
0	
1	
2	

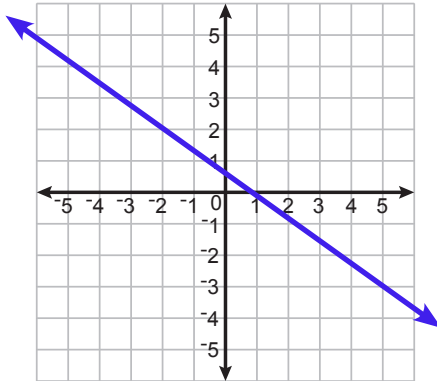


The Vertical Line Test - Set 1

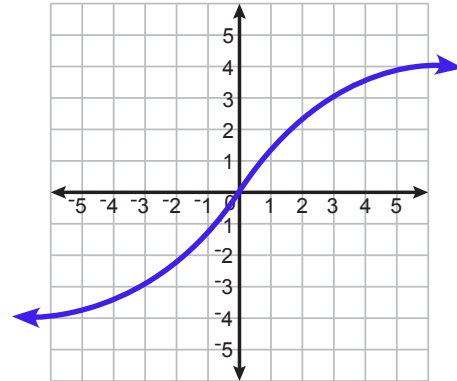
AB-WAF 3

Instructions: Use the Vertical Line Test to determine if each of these graphs qualifies as a function.

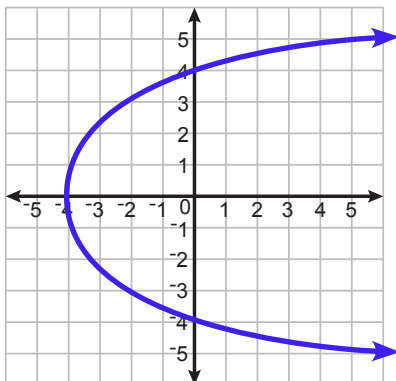
1 Function? Yes No



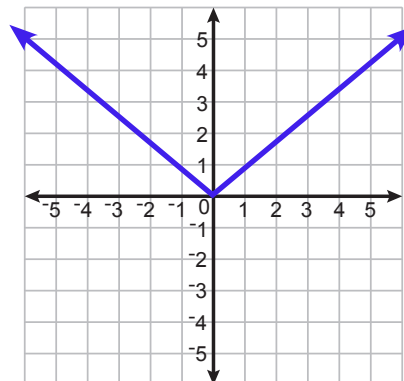
2 Function? Yes No



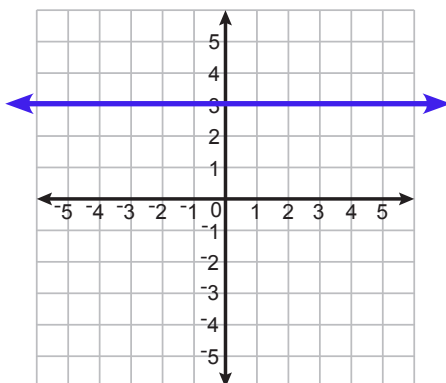
3 Function? Yes No



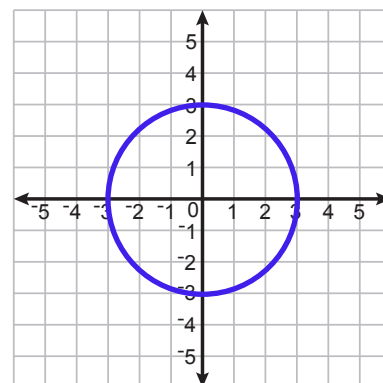
4 Function? Yes No



5 Function? Yes No



6 Function? Yes No

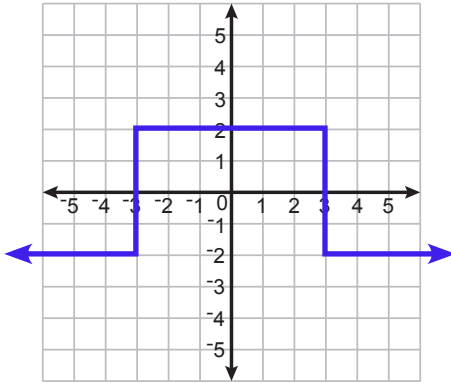


The Vertical Line Test - Set 2

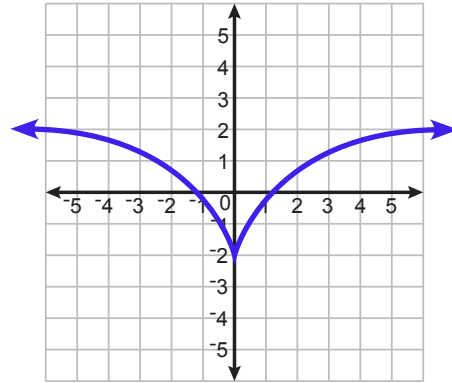
AB-WAF 4

Instructions: Use the Vertical Line Test to determine if each of these graphs qualifies as a function.

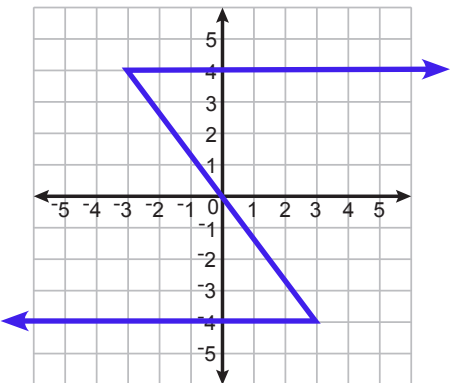
1 Function? Yes No



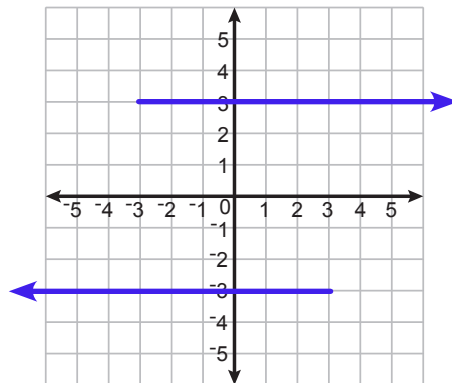
2 Function? Yes No



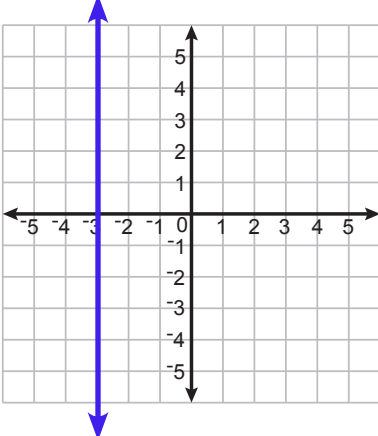
3 Function? Yes No



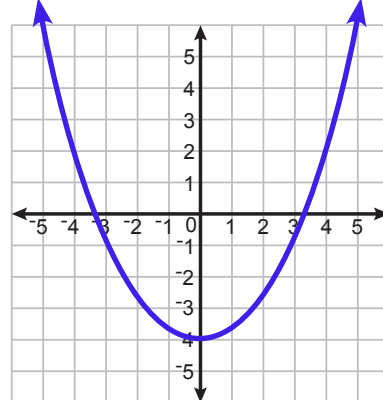
4 Function? Yes No



5 Function? Yes No



6 Function? Yes No



Evaluating Functions

AB-WAF 5

Instructions: Evaluate each function for the specified value. In other words, calculate the function's output value for the given input value.

1 Let $f(x) = 4x - 3$
Evaluate $f(2)$

$$\begin{aligned} f(2) &= 4(2) - 3 \\ &= 8 - 3 \end{aligned}$$

$$f(2) = 5$$

2 Let $f(x) = 2x + 1$
Evaluate $f(0)$

3 Let $g(a) = a^2 + 1$
Evaluate $g(-2)$

4 Let $f(x) = x^2 + x$
Evaluate $f(3)$

5 Let $g(a) = \frac{a}{2} + 3a$
Evaluate $g(-4)$

6 Let $f(t) = \frac{t^2}{2} + t$
Evaluate $f(-4)$

7 Let $f(x) = 3x^2 - 2x$
Evaluate $f(5)$

8 Let $g(a) = 3a^3 + 5$
Evaluate $g(-1)$

Function Tables

AB-WAF 1

Instructions: Complete each Function Table by calculating the output 'y' (or f(x)) for each input value 'x'.

1

$$y = 3x$$

Input x	Output y
0	0
1	3
2	6
3	9
4	12

2

$$f(x) = x + 2$$

Input x	Output f(x)
-2	0
-1	1
0	2
1	3
2	4

3

$$y = 2x - 3$$

Input x	Output y
2	1
4	5
6	9
8	13
10	17

4

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

Input x	Output f(x)
-2	-7
-1	-6
0	-5
1	-4
2	-3

5

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

Input x	Output y
-10	-5
-4	-2
0	0
4	2
10	5

6

$$f(x) = \frac{x}{2} + 3$$

Input x	Output f(x)
-8	-1
-6	0
-4	1
-2	2
0	3

Function Tables & Graphs

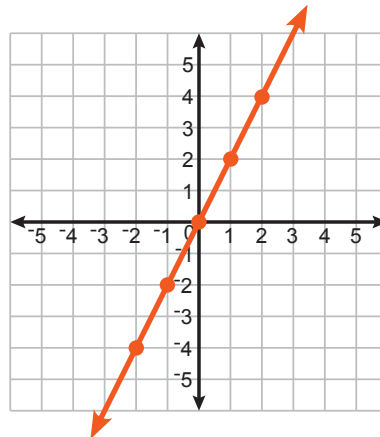
AB-WAF 2

Instructions: Complete each Function Table and then graph the function. Remember that each row of the function table forms an ordered pair (x, y).

1

$$y = 2x$$

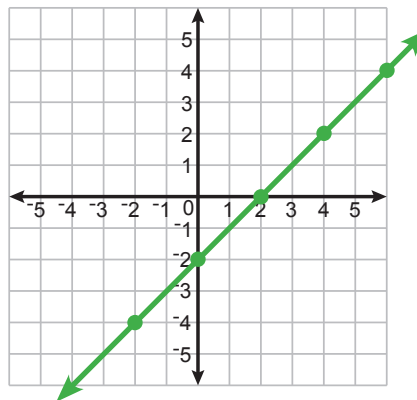
Input x	Output y
-2	-4
-1	-2
0	0
1	2
2	4



2

$$y = x - 2$$

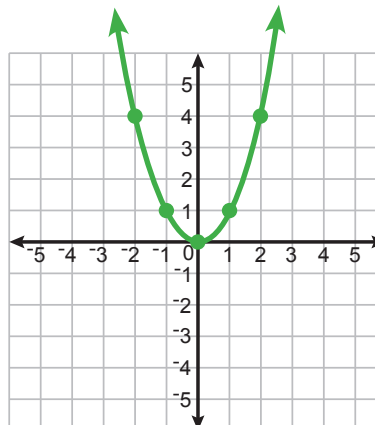
Input x	Output y
-2	-4
0	-2
2	0
4	2
6	4



3

$$y = x^2$$

Input x	Output y
-2	4
-1	1
0	0
1	1
2	4

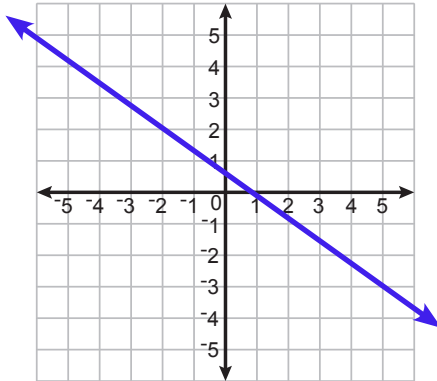


The Vertical Line Test - Set 1

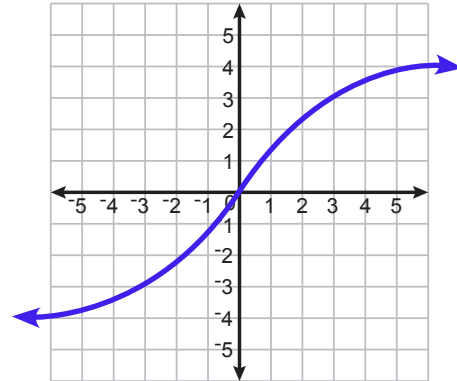
AB-WAF 3

Instructions: Use the Vertical Line Test to determine if each of these graphs qualifies as a function.

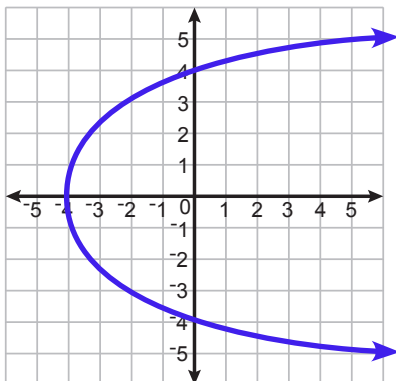
1 Function? Yes No



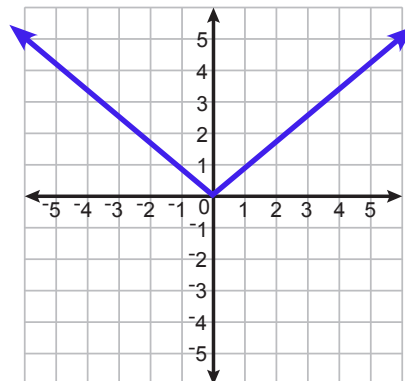
2 Function? Yes No



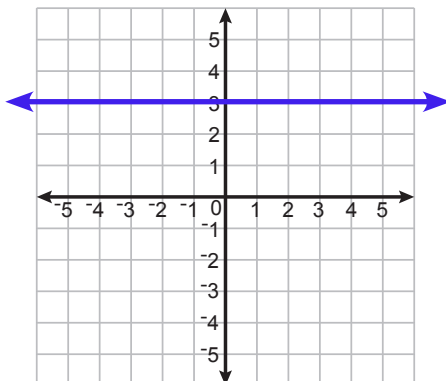
3 Function? Yes No



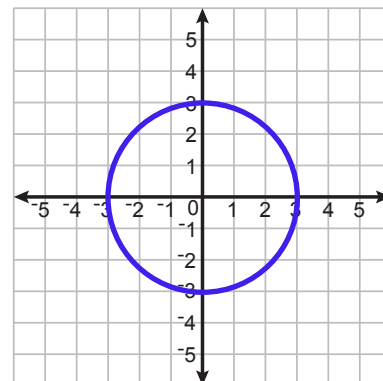
4 Function? Yes No



5 Function? Yes No



6 Function? Yes No

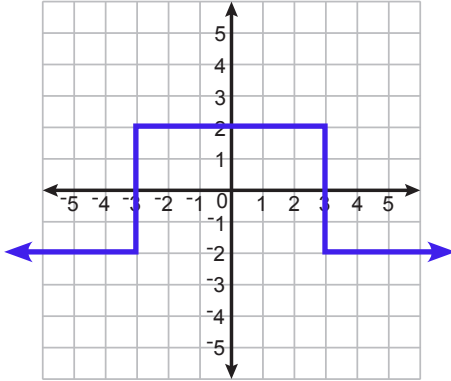


The Vertical Line Test - Set 2

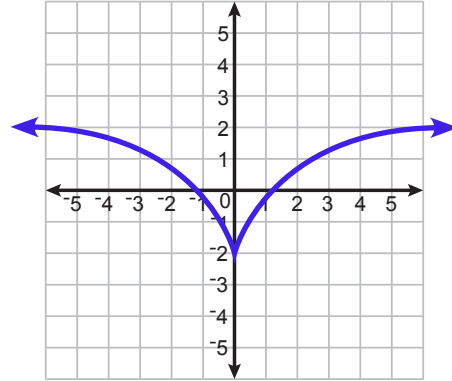
AB-WAF 4

Instructions: Use the Vertical Line Test to determine if each of these graphs qualifies as a function.

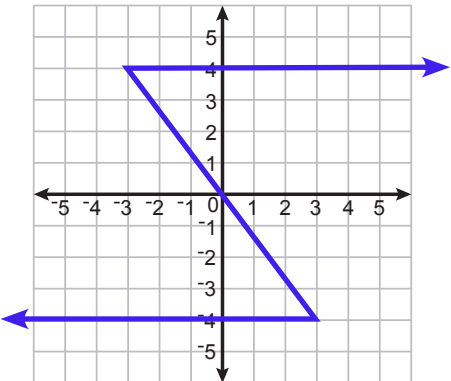
1 Function? Yes No



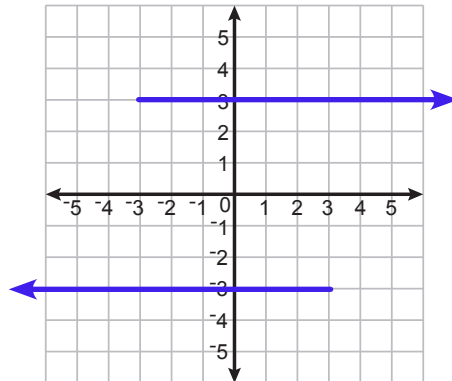
2 Function? Yes No



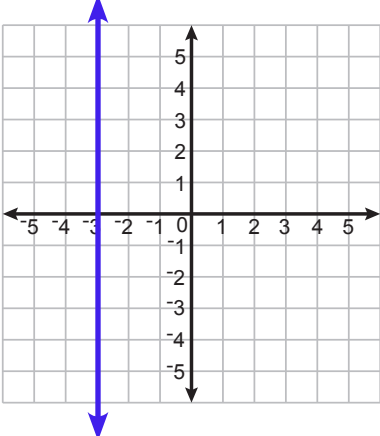
3 Function? Yes No



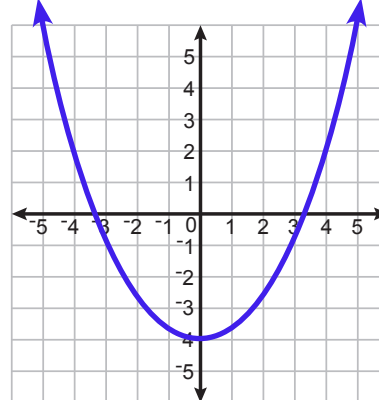
4 Function? Yes No



5 Function? Yes No



6 Function? Yes No



Evaluating Functions

AB-WAF 5

Instructions: Evaluate each function for the specified value. In other words, calculate the function's output value for the given input value.

1 Let $f(x) = 4x - 3$
Evaluate $f(2)$

$$f(2) = 4(2) - 3$$

$$= 8 - 3$$

$$f(2) = 5$$

2 Let $f(x) = 2x + 1$
Evaluate $f(0)$

$$f(0) = 2(0) + 1$$

$$= 0 + 1$$

$$f(0) = 1$$

3 Let $g(a) = a^2 + 1$
Evaluate $g(-2)$

$$g(-2) = (-2)^2 + 1$$

$$= 4 + 1$$

$$g(-2) = 5$$

4 Let $f(x) = x^2 + x$
Evaluate $f(3)$

$$f(3) = (3)^2 + 3$$

$$= 9 + 3$$

$$f(3) = 12$$

5 Let $g(a) = \frac{a}{2} + 3a$
Evaluate $g(-4)$

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

$$= -2 + (-12)$$

$$g(-4) = -14$$

6 Let $f(t) = \frac{t^2}{2} + t$
Evaluate $f(-4)$

$$f(-4) = \frac{(-4)^2}{2} + (-4)$$

$$= 8 - 4$$

$$f(-4) = 4$$

7 Let $f(x) = 3x^2 - 2x$
Evaluate $f(5)$

$$f(5) = 3(5)^2 - 2(5)$$

$$= 75 - 10$$

$$f(5) = 65$$

8 Let $g(a) = 3a^3 + 5$
Evaluate $g(-1)$

$$g(-1) = 3(-1)^3 + 5$$

$$= -3 + 5$$

$$g(-1) = 2$$