3.3 Function Notation

function notation $f(x)$ → read as "f of x"

Evaluate the function when x = -4, 0, and 2.

1. $f(x) = -x + 4$

x	$-x+4$	f(x)	
-4	$-(-4)+4$	8	$f(-4) = 8$
0	$-0+4$	4	$f(0) = 4$
2	$-2+4$	2	$f(2) = 2$

2. $g(x) = 5x$

x	5x	g(x)	
-4	5(-4)	-20	$f(-4) = -20$
0	5(0)	0	$f(0) = 0$
2	5(2)	10	$f(2) = 10$

3. Let $n(t)$ be the number of DVDs you have in your collection after t trips to the video store. Explain the meaning of each statement.

a. $n(0) = 8$ — after 0 trips, you have 8 DVDs

b. $n(3) = 14$ — after 3 trips, you have 14 DVDs

c. $n(5) > n(3)$ — the # of DVDs you have after 5 trips is greater than the # of DVDs you have after 3 trips

Find the value of x so that the function has the given value.

4. $b(x) = -3x + 1$; $b(x) = -20$

$-20 = -3x + 1$
$-1 \quad -1$
$-21 = -3x$
$\frac{-21}{-3} = \frac{-3x}{-3}$
$7 = x$

5. $r(x) = 4x - 3$; $r(x) = 33$

$33 = 4x - 3$
$+3 \quad +3$
$36 = 4x$
$\frac{36}{4} = \frac{4x}{4}$
$9 = x$

6. $m(x) = -\frac{3}{5}x - 4$; $m(x) = 2$

$2 = -\frac{3}{5}x - 4$
$+4 \quad +4$
$(6)\frac{5}{}= (\frac{-3}{5}x)^5$
$\frac{30}{-3} = \frac{-3x}{-3}$
$-10 = x$

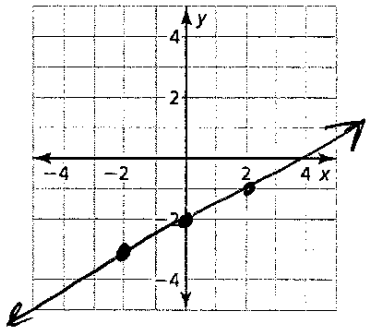
7. $w(x) = \frac{5}{6}x - 3$; $w(x) = -18$

$-18 = \frac{5}{6}x - 3$
$+3 \quad +3$
$\frac{6}{5}(-15) = (\frac{5}{6}x)\frac{6}{5}$
$-18 = x$

Graph the linear function by making a table of values.

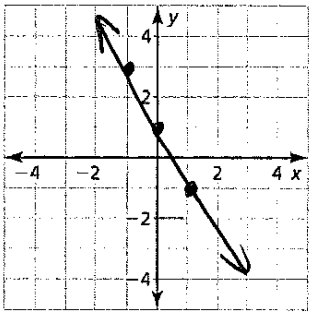
8. $s(x) = \frac{1}{2}x - 2$

x	$\frac{1}{2}x - 2$	s(x)	
-2	$\frac{1}{2}(-2) - 2$	-3	$\longrightarrow (-2, -3)$
0	$\frac{1}{2}(0) - 2$	-2	$\longrightarrow (0, -2)$
2	$\frac{1}{2}(2) - 2$	-1	$\longrightarrow (2, -1)$



9. $t(x) = 1 - 2x$

x	1−2x	t(x)	
-1	1−2(-1)	3	$\longrightarrow (-1, 3)$
0	1−2(0)	1	$\longrightarrow (0, 1)$
1	1−2(1)	-1	$\longrightarrow (1, -1)$



10. The function $B(m) = 50m + 150$ represents the balance (in dollars) in your savings account after m months. The table shows the balance in your friend's savings account. Who has the better savings plan? Explain.

FRIEND'S

Month	Balance	
2	$330	+80
4	$410	+80
6	$490	
8	570	
10	650	
12	730	

Your Account

m	50m+150	B(m)
2	50(2)+150	250
4	50(4)+150	350
6	50(6)+150	450
8	50(8)+150	550
10	50(10)+150	650
12	50(12)+150	750

Your plan is better because you are saving $50/month and your friend is saving $40/month.