If $f(x) = 2x + 4$ and $g(x) = x^2 + 5x + 4$, find each value

7. g(-12) → $(-12)^2 + 5(-12) + 4 = 88$

8. -3[f(8)]

9. f(g(4))

10. g(f(-1))

$f(-1) \rightarrow 2(-1) + 4$

$= 2$

$g(2) \rightarrow (2)^2 + 5(2) + 4$

$4 + 10 + 4$

$= 18$

Solving Equations in Function Notation

1. If f(x) = 7x + 2, find x so that f(x) = -54

$7x + 2 = -54$

$-2 \quad -2$

$\frac{7x}{7} = \frac{-56}{7}$

$x = -8$

$f(-8) \rightarrow -54$

2. If f(x) = -5x - 7, find x so that f(x) = 108

$-5x - 7 = 108$

$+7 \quad +7$

$\frac{-5x}{-5} = \frac{115}{-5}$

$x = -23$

3. If f(x) = 4x - 6, find x so that f(x) is six times the value of x.

$4x - 6 = 6x$

$-4x \quad -4x$

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

$x = -3$

4. If f(x) = 23 - 4x, find x so that f(x) is 1 less than 8 times x.

$23 - 4x = 8x - 1$

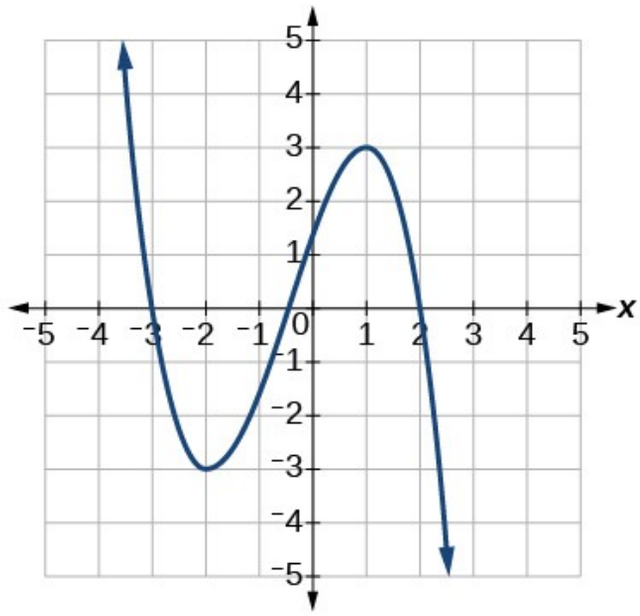
$+4x \quad +4x$

$23 = 12x - 1$

$+1 \quad +1$

$\frac{24}{12} = \frac{12x}{12}$

$2 = x$



6. Find f(-3)

= 0

7. Find f(1)

= 3

8. Find f(x) = -3

x = -2 and 2.2

5. The temperature of the water at the surface of a deep lake is 22°C. As Renaldo scuba dives to the depths of the lake, he finds that the temperature decreases by 1.5°C every meter he descends.

   a. Model the water temp. at any depth using function notation.

   $T(x) = 22 - 1.5x$

   b. Use this function to determine the water temp. at a depth of 40m.

   $T(40) = 22 - 1.5(40) = -38°C$

   c. At the bottom of the lake, the temp. is 5.5°C. How deep is the lake?

$$5.5 = 22 - 1.5x$$
$$-22 \quad -22$$
$$-16.5 = -1.5x$$
$$-1.5 \quad -1.5$$
$$11 = x$$

6. The cost of your cell phone's data plan can be modeled by the function c(b) = 22 + 0.08b, where b is the amount of Megabytes over the allotted 2 GB of data. If your cell phone bill c(b) = $34, then how many Megabytes did you use over your allotted amount?

$22 + 0.08b = 34$

$-22 \qquad -22$

$0.08b = 12$

$\frac{0.08b}{0.08} = \frac{12}{0.08}$

$b = 150$

Try to figure this one out...

If $f(x) = \begin{cases} 2x^2 - 1, & x < 1 \\ x + 4, & x \geq 1 \end{cases}$, find the following values

a. f(3)

$x + 4$

$3 + 4$

7

b. f(-2)

$2x^2 - 1$

$2(-2)^2 - 1$

$2(4) - 1$

$8 - 1$

7

c. f(1)

$x + 4$

$1 + 4$

5