

## 9.1 Part 2 Describe Relationships

Equations that represent functions can be written in function notation. The equation

$$y = 2x + 1 \text{ can be written } f(x) = 2x + 1.$$

The symbol  $f(x)$  is read "f of x".

**\*\*f(x) does NOT represent multiplication!\*\***

If you see  $f(3)$ , that means you are plugging the value 3 in for x.

### Example 1

If  $f(x) = 3x - 7$ , find each of the following.

a)  $f(2)$

b)  $f(-4)$

c)  $f(0)$

$$\begin{aligned} f(2) &= 3 \cdot 2 - 7 \\ &= 6 - 7 \end{aligned}$$

$$\boxed{f(2) = -1}$$

$$\begin{aligned} f(-4) &= 3 \cdot -4 - 7 \\ &= -12 - 7 \end{aligned}$$

$$\boxed{f(-4) = -19}$$

$$\begin{aligned} f(0) &= 3 \cdot 0 - 7 \\ &= 0 - 7 \end{aligned}$$

$$\boxed{f(0) = -7}$$

Example 2

If  $h(x) = -x + 8$ , find each of the following.

a)  $h(-9)$

b)  $h(6)$

c)  $h(-1)$

$$\begin{aligned} h(-9) &= -(-9) + 8 \\ &= 9 + 8 \end{aligned}$$

$$\boxed{h(-9) = 17}$$

$$\begin{aligned} h(6) &= -(6) + 8 \\ &= -6 + 8 \end{aligned}$$

$$\boxed{h(6) = 2}$$

$$\begin{aligned} h(-1) &= -(-1) + 8 \\ &= 1 + 8 \end{aligned}$$

$$\boxed{h(-1) = 9}$$

Example 3

If  $k(x) = x^2 + 4$ , evaluate the function when

①  $x = 2$ , ②  $x = 0$ , ③  $x = -3$ .

①  $x = 2$

$$\begin{aligned} k(2) &= 2^2 + 4 \\ &= 4 + 4 \end{aligned}$$

$$\boxed{k(2) = 8}$$

②  $x = 0$

$$\begin{aligned} k(0) &= 0^2 + 4 \\ &= 0 + 4 \end{aligned}$$

$$\boxed{k(0) = 4}$$

③  $x = -3$

$$\begin{aligned} k(-3) &= (-3)^2 + 4 \\ &= 9 + 4 \end{aligned}$$

$$\boxed{k(-3) = 13}$$