

Function Values

FUNCTIONAL VALUES

Definitions:

1. The symbol $f(x)$ means the “function of x ” and is called the **function notation**.
2. In function notation, the value within the parentheses is called the **argument** of the function.
3. The variable in an argument can be replaced by a number, called a **replacement value**. A replacement value must be an element (member) of the domain.

Caution: The parentheses used in the function notation, $f(x)$, do *not* mean “multiply.”

When a replacement value is used, each and every occurrence of the variable gets replaced by this value.

For example, if $f(x) = 2x^2 - 5x + 4$, then

$$\begin{aligned} \text{a) } f(3) &= 2(3)^2 - 5(3) + 4 \\ &= 2(9) - 15 + 4 \\ &= 18 - 15 + 4 \\ &= 7 \end{aligned}$$

$$\begin{aligned} \text{b) } f(-4) &= 2(-4)^2 - 5(-4) + 4 \\ &= 2(16) + 20 + 4 \\ &= 32 + 20 + 4 \\ &= 56 \end{aligned}$$

You Try It 1 Given $f(x) = \sqrt{3x + 15}$, find the following:

$$\text{a) } f(22) \qquad \text{b) } f\left(\frac{1}{3}\right) \qquad \text{c) } f(-2)$$

You Try It 2 Given $g(x) = -x^2 - 4x + 12$, find the following:

$$\text{a) } g(0) \qquad \text{b) } g(-5) \qquad \text{c) } g(2)$$

Focus Exercises

Find the requested functional value for $f(x) = \sqrt{2x + 5}$ and $g(x) = x^2 - x + 2$

1. $f(2)$

2. $f(10)$

3. $f\left(-\frac{1}{2}\right)$

4. $f(-2)$

5. $g(0)$

6. $g(5)$

7. $g(-1)$

8. $g(-3)$

Given $f(t) = \cos(t)$, and $g(t) = \cos(t) - \sin(t)$, find the following.

9. $f(0^\circ)$

10. $f(45^\circ)$

11. $f(90^\circ)$

12. $g(0^\circ)$

13. $g(90^\circ)$

14. $g(45^\circ)$