

HW: Function Notation

Function notation is a useful way in mathematics to identify different equations. We use it as a formal way to show whether to EVALUATE (find the value) of a function, or SOLVE (for a variable).

Use the following functions to answer the problems below:

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

$$g(x) = \frac{-12}{x}$$

$$m(x) = x^2$$

$$d(x) = 2(x - 3)$$

Here we will practice EVALUATING.

Example 1: Find $f(-3)$.

↑ Plug in -3 for "x" in "f"

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

$$f(-3) = -6 - 3$$

$$f(-3) = -9$$

Example 2: Find $d(6)$.

← Plug in 6 for "x" in d

$$d(6) = 2(6 - 3)$$

$$d(6) = 2(3)$$

$$d(6) = 6$$

You Try:

1. Find $f(5)$.

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

$$= 7$$

2. Find $g(-2)$.

$$g(-2) = \frac{-12}{-2}$$

$$= 6$$

3. Find $d(-5)$.

$$d(-5) = 2(-5 - 3)$$

$$= -16$$

4. Find $m(5)$.

$$m(5) = (5)^2$$

$$= 25$$

5. Find $m(-5)$.

$$m(-5) = (-5)^2$$

$$= 25$$

6. Find $g(6)$.

$$g(6) = \frac{-12}{6}$$

$$= -2$$

7. Find $f(-4)$.

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

$$= -11$$

8. Find $d(11)$.

$$d(11) = 2(11 - 3)$$

$$= 16$$

9. Find $m(-11)$.

$$m(-11) = (-11)^2$$

$$= 121$$

Now, we will practice SOLVING using the following functions to answer the problems below:

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

$$g(x) = \frac{-12}{x}$$

$$d(x) = 2(x - 3)$$

Example 1: Solve $f(x) = -11$

$$\begin{aligned} 2x - 3 &= -11 \\ +3 \quad +3 \\ \hline 2x &= -8 \\ \frac{2x}{2} &= \frac{-8}{2} \end{aligned}$$

You Try:

$$x = -4$$

1. Solve $d(x) = -18$

$$\begin{aligned} 2(x - 3) &= -18 \\ x - 3 &= -9 \\ \hline x &= -6 \end{aligned}$$

3. Solve $g(x) = 3$.

$$\begin{aligned} \frac{-12}{x} &= 3 \\ -12 &= 3x \\ \hline -4 &= x \end{aligned}$$

Optional Challenge:

5. If $m(x) = x^2$, solve $m(x) = 144$

$$\begin{aligned} x^2 &= 144 \\ \hline x &= 12 \text{ OR } x = -12 \end{aligned}$$

7. If $p(x) = \frac{2x-5}{3}$, find $p(18)$.

$$\begin{aligned} p(18) &= \frac{2(18) - 5}{3} \\ &= \frac{36 - 5}{3} = \frac{31}{3} \end{aligned}$$

Example 2: Solve $g(x) = 6$.

$$\begin{aligned} \frac{-12}{x} &= 6 \cdot x \\ -12 &= 6x \\ \frac{-12}{6} &= \frac{6x}{6} \end{aligned}$$

2. Solve $f(x) = 15$.

$$\begin{aligned} 2x - 3 &= 15 \\ 2x &= 18 \\ \hline x &= 9 \end{aligned}$$

4. Solve $d(x) = -22$.

$$\begin{aligned} 2(x - 3) &= -22 \\ x - 3 &= -11 \\ \hline x &= -8 \end{aligned}$$

6. If $h(x) = x^2 - 5x + 3$, find $h(-7)$.

$$\begin{aligned} h(-7) &= (-7)^2 - 5(-7) + 3 \\ &= 49 + 35 + 3 \\ &= 87 \end{aligned}$$

7. If $p(x) = \frac{2x-5}{3}$, solve $p(x) = -5$.

$$\begin{aligned} \frac{2x - 5}{3} &= -5 \\ 2x - 5 &= -15 \\ 2x &= -10 \rightarrow x = -5 \end{aligned}$$