# Find Values Using Function Notation

## What does a function do?

Takes an input(x), performs operations on it and then gives an output (y)

## What does function notation look like?

$f(x) =$ ... something to do with x
read as $f$ at $x$ or $f$ of $x$
replaces $y$

## Example 1

For each of the following functions, determine $f(2)$,$f(-5)$, and $f(1/2)$
a) $f(x) = 2x - 4$

$$\begin{aligned} f(2) &= 2(2) - 4 \\ &= 4 - 4 \\ &= 0 \end{aligned}$$

$$\begin{aligned} f(5) &= 2(5) - 4 \\ &= 10 - 4 \\ &= 6 \end{aligned}$$

$$\begin{aligned} f\left(\frac{1}{2}\right) &= 2\left(\frac{1}{2}\right) - 4 \\ &= 1 - 4 \\ &= -3 \end{aligned}$$

b) $f(x) = 3x^2 - x + 7$

$$\begin{aligned} f(2) &= 3(2)^2 - 2 + 7 \\ &= 12 - 2 + 7 \\ &= 10 + 7 \\ &= 17 \end{aligned}$$

$$\begin{aligned} f(5) &= 3(-5)^2 - (-5) + 7 \\ &= 75 - (-5) + 7 \\ &= 80 + 7 \\ &= 87 \end{aligned}$$

$$\begin{aligned} f\left(\frac{1}{2}\right) &= 3\left(\frac{1}{2}\right)^2 - \left(\frac{1}{2}\right) + 7 \\ &= \frac{3}{4} - \left(\frac{1}{2}\right) + 7 \\ &= \frac{1}{4} + 7 \\ &= 7\frac{1}{4} \end{aligned}$$

## Applications of Function Notation

For the function $h(t) = -3(t+1)^2 + 5$
a) Graph it and find the domain and range
skipping because graphing is beign annoying b) Find $h(-7)$

$$\begin{aligned} h(-7) &= -3(-7+1)^2 + 5 \\ &= -3(36) + 5 \\ &= -108 + 5 \\ &= -103 \end{aligned}$$