

Key point: Function notation is for example:

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

$f(4)$  is asking you what is the  $y$  value when  $x$  is equal to 4

You do this by substituting the 4 in for  $x$ ...this can be done on your calculator

$$F(\text{dog}) = 3(\text{dog}) + 2$$

We substituted "dog" in for the  $x$ . this is showing that you understand substitution.

Name \_\_\_\_\_  
Date \_\_\_\_\_

**Advanced Algebra**  
**Unit 2: Families of Functions**  
**Homework #4**

1. How does the graph of  $y = f(x-3)$  compare with the graph of  $y = f(x)$ ? A short answer will be fine.

It is moved 3 units to the Right

2. If  $f(x) = -2x$ , find the following:

a. $f(x+3)$	b) $-3 + f(x-2)$	c) $5 + f(x+1)$
answer: $-2x - 6$	answer: $-2x + 1$	answer: $-2x + 3$

$$\begin{aligned} -2(x+3) \\ -2x - 6 \end{aligned}$$

$$\begin{aligned} -3 + -2(x-2) \\ -3 + -2x + 4 \\ -2x + 1 \end{aligned}$$

$$\begin{aligned} 5 + -2(x+1) \\ 5 + -2x - 2 \\ -2x + 3 \end{aligned}$$

- 3) If  $f(28) = 32$ , what is the ordered pair that you would graph on the coordinate plane?

$\begin{matrix} \uparrow & \uparrow \\ x & y \end{matrix} \quad (28, 32)$

- 4) Solve the following equations:

a)  $2(x+4) = 38$

$$\begin{aligned} x+4 &= 19 \\ x &= 15 \end{aligned}$$

b)  $7 + \frac{1}{2}(x-3) = 21$

$$\begin{aligned} \frac{1}{2}(x-3) &= 14 \\ x-3 &= 28 \\ x &= 31 \end{aligned}$$

c)  $0 = 4(x-3)^2 - 38$  (there should be two answers!)

$$\begin{aligned} 4(x-3)^2 &= 38 \\ (x-3)^2 &= 9.5 \\ x-3 &= \pm \sqrt{9.5} \end{aligned}$$

$$\begin{aligned} x &= 3 \pm 3.08 \\ x &= 6.08 \text{ and } -0.08 \end{aligned}$$

d)  $0 = 3(x-3)^3 + 58$

$3(x-3)^3 + 58 = 0$

$(x-3)^3 = -19.333$

$x-3 = -2.68$

$x = 0.32$

e)  $0 = 2|x-5| - 18$

$2|x-5| - 18 = 0$

$|x-5| = 9$

$x-5 = 9$

$x = 14$

$x-5 = -9$

$x = -4$

f)  $0 = 5(x-6)^{\frac{1}{2}} - 3$

$5(x-6)^{\frac{1}{2}} - 3 = 0$

$(x-6)^{\frac{1}{2}} = \frac{3}{5}$

$x-6 = \frac{9}{25}$

$x = 6.36$

g)  $0 = 3(x-8)^{\frac{1}{3}} + 4$

$3(x-8)^{\frac{1}{3}} + 4 = 0$

$(x-8)^{\frac{1}{3}} = -\frac{4}{3}$

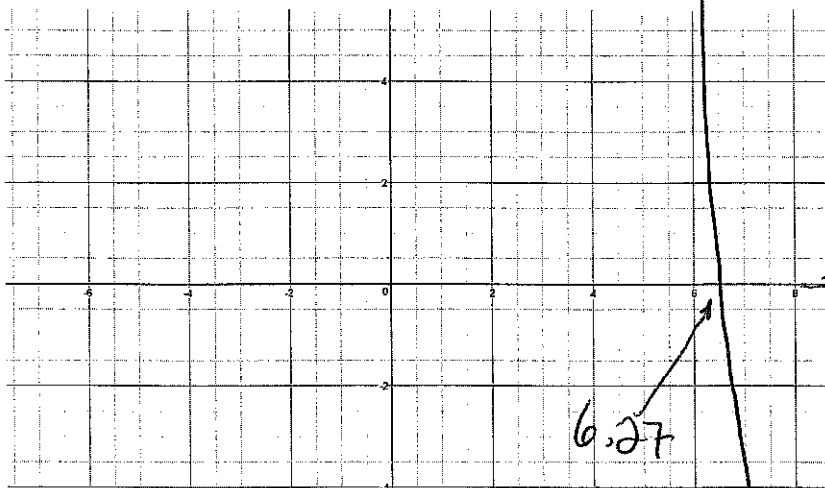
$x-8 = -2.37$

$x = 5.63$

I can sketch a graph of a function:

Find the x and y intercepts of the following and make a sketch

$y = 4(x-8)^2 - 12$



$4(x-8)^2 - 12 = 0$

$(x-8)^2 = 3$

$x = 8 \pm \sqrt{3}$

$8 \pm 1.73$

9.73 6.27

$(8, -12)$