

Function Notation

Consider the problem

$$y = 3x^2 - 2$$

$$y = 4x - 3$$

$$y = 6 - 5x$$

Find y when $x = -2$

$$y = 10$$

$$y = -11$$

$$y = 16$$

But which y is correct?

We need a better system ... and that where function notation comes in.

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

$$g(x) = 4x - 3$$

$$h(x) = 6 - 5x$$

Now if I say:

$g(7)$... it means use equation called $g(x)$ and sub in 7

$$g(7) = 4(7) - 3$$

$$g(7) = 24$$

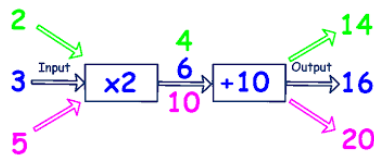
$h(3)$... means use equation called $h(x)$ and sub in 3

$$h(3) = 6 - 5(3)$$

$$h(3) = -9$$

remember the answer is just the y -value

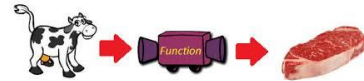
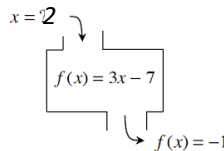
In elementary school you might have done input-output machine:



Number in $x 2 + 10$... out pops answer

Input $6 x 2 + 10$... answer 22

For us ... it's just function notation:



Evaluate/solve the following given that $f(x) = 9x - 7$ and $p(x) = 18 - 4x$

a) $f(2)$

sub 2 into $f(x)$

$$9(2) - 7$$

$$f(2) = 11$$

b) $p(4)$

sub 4 in $p(x)$

$$18 - 4(4)$$

$$p(4) = 2$$

c) $f(-3)$

sub -3 into $f(x)$

$$9(-3) - 7$$

$$f(-3) = -34$$

d) $p(-5)$

sub 4 in $p(x)$

$$18 - 4(-5)$$

$$p(-5) = 38$$

e) $f(x) = 56$

here you know the answer $y = 56$

$$56 = 9x - 7$$

$$63 = 9x \quad x = 7$$

f) $p(x) = 24$

here you know the answer $y = 24$

$$24 = 18 - 4x$$

$$6 = -4x \quad x = \frac{-3}{2}$$

g) $p(3) - f(7)$

$$(18 - 4(3)) - (9(7) - 7)$$

$$6 - 56 = -47$$

h) $p(x) = f(x)$

$$18 - 4x = 9x - 7$$

$$-13x = -25 \quad x = \frac{25}{13}$$

Assignment = worksheet

Why Couldn't the Bowlegged Cowboy Round up the herd?

Complete each table for each function. Find the answer on the boxes at the bottom of the page and write the corresponding letter above it

$f(x) = \frac{x}{3}$	
x	f(x)
f(18)	L
f(0)	E
f(-3)	R
f(-6)	T

$g(x) = x^3 + 1$	
x	g(x)
g(2)	S
g(-2)	E
g(3)	O
g(-5)	T

$f(x) = (2)^x - 1$	
x	f(x)
f(2)	C
f(3)	N
f(4)	G
f(6)	H

$Q(x) = 1 - 4x^2$	
x	Q(x)
Q(1)	E
Q(2)	L
Q(-3)	A
Q(0)	O

$f(x) = \frac{x^2 + x}{x}$	
x	f(x)
f(1)	E
f(4)	H
f(10)	E
f(100)	U

$f(x) = \frac{24}{x+1}$	
x	f(x)
f(2)	D
f(-2)	G
f(-4)	C
f(-5)	V

$f(x) = x^3 - x^2$	
x	f(x)
f(2)	H
f(-2)	S
f(10)	V
f(-10)	T

$f(x) = (3x - 1)^2$	
x	f(x)
f(2)	E
f(-1)	R
f(-2)	E
f(-3)	I

ANSWERS

4	
2	
3	
1	
101	
6	
8	
7	
-7	
900	
11	
-1	
15	
25	
-124	
5	
100	
9	
-8	
-35	
-15	
-6	
0	
-12	
-1100	
28	
-24	
49	
-2	
63	
-3	
16	

Now complete Page 272

#14a)

b)

c)

d)

15ai)

aii)

bi)

bii)

