

Today's Learning Goal(s):

Date: Feb. 22/18
(Every lesson)

By the end of the class, I will be able to:

- a) use function notation to represent linear and quadratic functions.

1.2 Function Notation

Function notation, such as $f(x)$, is used to represent the value of the dependent variable for a given value of the independent variable.

x is often called the input and $f(x)$ is called the output.

$f(x)$ is read "f of x" or "f at x"

Compared to the notation you have been used to, y and $f(x)$ are interchangeable.

Therefore $y = -3x + 4$ can be written as $f(x) = -3x + 4$

or $y = 2(x - 3)^2 + 4$ can be written as $f(x) = 2(x - 3)^2 + 4$

Ex. 1 If $f(x) = -x(x - 6)$ then find:

a) $f(2)$

$$\begin{aligned} &= -(2)(2-6) \\ &= -2(-4) \\ &= 8 \end{aligned}$$

b) $f(a)$

$$\begin{aligned} &= -a(a-6) \\ 0 &= -x^2 + 6x + 16 \\ &= -1(x^2 - 6x - 16) \end{aligned}$$

c) Find x if $f(x) = -16$

$$\begin{aligned} -16 &= -x(x-6) \\ -16 &= -x^2 + 6x \\ x^2 - 6x - 16 &= 0 \\ (x-8)(x+2) &= 0 \\ \therefore x-8=0 \text{ or } x+2=0 \\ x=8 \quad x &= -2 \end{aligned}$$

Ex. 2 Graph $f(x) = -x(x-6)$ is the same as...

$$y = -x(x-6)$$

Let $y=0$ or $f(x)=0$
 $0 = -x(x-6)$

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 $x=0$ or $x=6$

Eqn of the Axis: $x = \frac{0+6}{2}$

$$x = 3$$

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

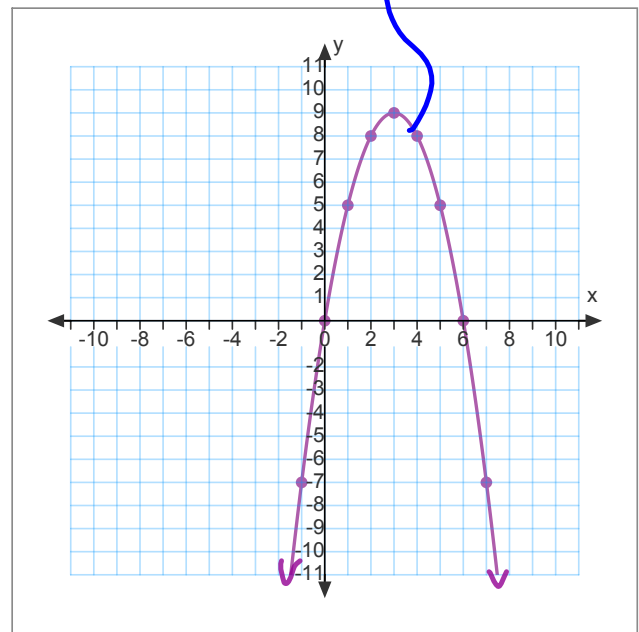
$$= -3(-3)$$

$$= 9$$

$\therefore (3, 9)$ is the vertex

$f(2) = 8$ represents

the point $(2, 8)$



M	G
1	1
2	4
3	9

Ex. 3 If $f(x) = x^2$ then find $f(x+4)$.

$$f(x+4) = (x+4)^2$$

$$= x^2 + 8x + 16$$

Recall the 3 forms of quadratic functions:

standard $y = ax^2 + bx + c$

vertex $y = a(x-h)^2 + k$

intercept
factored
zeros $y = a(x-r)(x-s)$
 $= a(x-r_1)(x-r_2)$

Are there any Homework Questions you would like to see on the board?

Last day's work: p. 2 #1-8

READ pp. 5-9

pp. 10-11 #1-3, 6, 7a, 8, 9b

[p.13 #1-3]

pp. 35-36 #1-3, 5

Today's Homework Practice includes:

pp. 22-23 #1, 2, 4-7, 9, 10

Function Notation Worksheet #1-6

(answer keys on class website)