

Unit 5.1 • Graphing Quadratic Functions U1

Pg 249

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

$\begin{matrix} + \\ - \\ \hline \end{matrix} \frac{b}{2a}$
y-intercept

axis of symmetry = $\frac{-b}{2a}$

Ex #1: $f(x) = 3x^2 - 12x + 6$

$$\frac{-b}{2a} = \frac{-(-12)}{2(3)} = 2$$

x	y
2	-6

vertex $(2, -6)$

$$3(2)^2 - 12(2) + 6$$

$$12 - 24 + 6$$

$$-12 + 6$$

$$-6$$

Ex #2:

$$f(x) = x^2 + 4x - 3$$

$$\frac{-b}{2a} = \frac{-4}{2} = -2$$

x	y
-2	-7

vertex $(-2, -7)$

$$(-2)^2 + 4(-2) - 3$$

$$4 - 8 - 3$$

$$-4 - 3$$

$$-7$$

Ex #3

$$f(x) = -4x^2 + 12x + 18$$

$$\frac{-b}{2a} = \frac{-12}{2(-4)} = \frac{6}{-4} = \frac{3}{-2} = -1.5$$

Plot 1 Plot 2

$$y = -4x^2 + 12x + 18$$

Window $x_{min} = -20 >$

$x_{max} = 20 >$

$x_{sc1} = 1$

$y_{min} = -20 >$

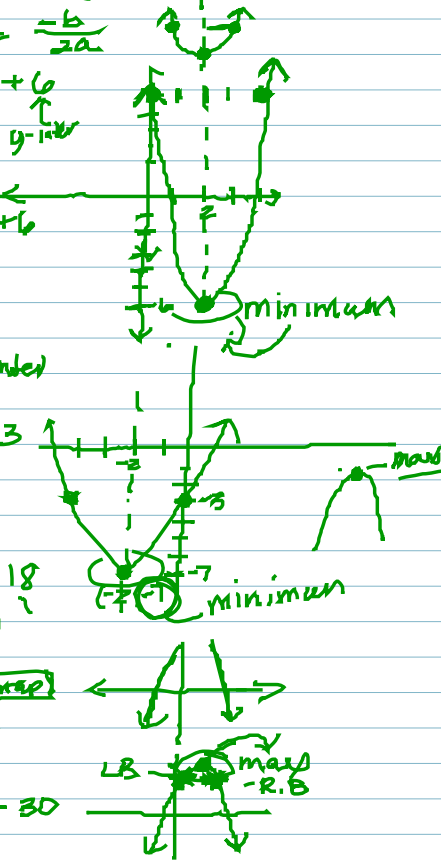
$y_{max} = 20 >$

[2nd] [calc] 4: MAX

Left bound \rightarrow

Right bound \rightarrow

Max $x = 1.5$ $y = 27$



Unit 5.1: Graphing Quadratic Functions UN

Dg 249

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

$\begin{matrix} + \\ - \\ \hline \end{matrix}$
 $\begin{matrix} \uparrow \\ \downarrow \\ \hline \end{matrix}$
 $\begin{matrix} \uparrow \\ \downarrow \\ \hline \end{matrix}$
 $\begin{matrix} \uparrow \\ \downarrow \\ \hline \end{matrix}$

y-intercept

axis of symmetry = $\frac{-b}{2a}$

Ex #1: $f(x) = 3x^2 - 12x + 6$

$$\frac{-b}{2a} = \frac{12}{6} = 2$$

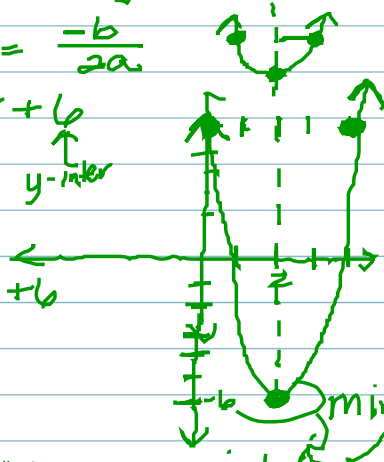
x	y
vertex -2	-6

$$3(2)^2 - 12(2) + 6$$

$$12 - 24 + 6$$

$$-12 + 6$$

$$-6$$



Ex #2:

$$f(x) = x^2 + 4x - 3$$

$$\frac{-b}{2a} = \frac{-4}{2} = -2$$

y-inter

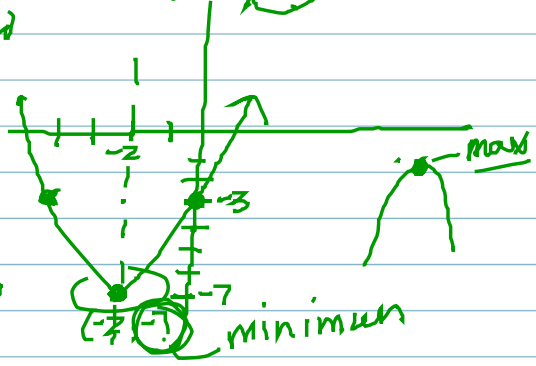
x	y
vertex -2	-7

$$(-2)^2 + 4(-2) - 3$$

$$4 - 8 - 3$$

$$-4 - 3$$

$$-7$$

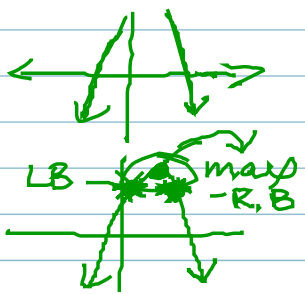


Ex #3

$$f(x) = -4x^2 + 12x + 18$$

$$\frac{-b}{2a} = \frac{-12}{-8} = \frac{6}{4} = \frac{3}{2} = 1.5$$

Plot 1 Plot 2
 $y = -4x^2 + 12x + 18$ [Graph]
 Window
 $x_{min} = -20$
 $x_{max} = 20$
 $x_{sc1} = 1$
 $y_{min} = -20$
 $y_{max} = 20$ 30



[2nd] [Calc] 4: MAX

Left bound \rightarrow
 Right bound \rightarrow [Enter] Guess [Enter] Max $x=1.5$ $y=27$