MCF 3MI Lesson 3_R2

Unit 3 - REVIEW 2

Date: May 26 /18

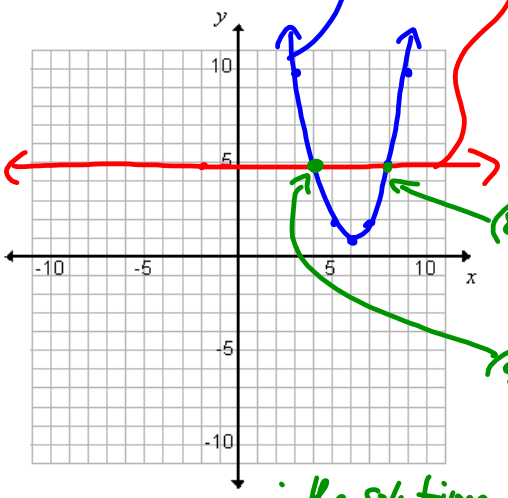
Solving Quadratic Equations by Graphing (Lesson 3_3)

Ex. 1 Determine the solutions to the quadratic equation $x^2 - 12x + 37 = 5$ by graphing.
[Keep in mind we are looking for the values of ***x*** that satisfy this equation.]

Method 1 split the equation and graphed the related functions on the same grid.

$y_1 = x^2 - 12x + 37$ $y_2 = 5$

The solutions to the original equation are the *x* values of the points of intersection of the two functions.



$y_1 = x^2 - 12x + 37$

$= x^2 - 12x + 36 - 36 + 37$

$= (x-6)^2 + 1$

$\therefore V(6,1)$ $a = 1$ $\therefore$ MG 1 1 2 4 3 9

$b = -12$

$* \left(\frac{b}{2}\right)^2$

$= \left(-\frac{12}{2}\right)^2$

$= 6^2$

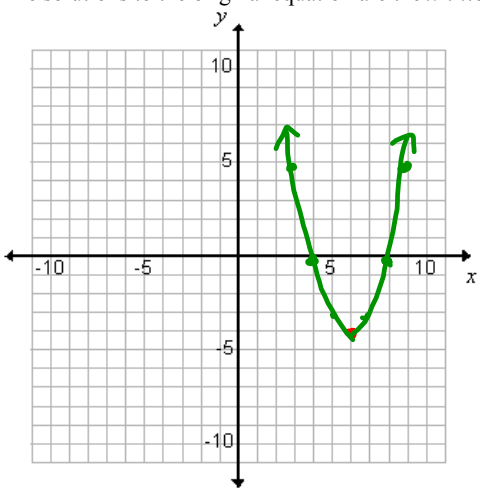
$= 36$

$y = 5$

$(-1,5), (-2,5)$

$\therefore$ the solutions are $x = 4$ or $x = 8$

Method 2 rearranged the equation and set it equal to zero.
Then graph the related quadratic function to determine the solutions to the quadratic equation.
The solutions to the original equation are the *x-intercepts* of the new function.



$x^2 - 12x + 37 = 5$

$x^2 - 12x + 37 - 5 = 0$

$x^2 - 12x + 32 = 0$

$\therefore$ Graph $y = x^2 - 12x + 32$

$= x^2 - 12x + 36 - 36 + 32$

$= (x-6)^2 - 4$

$\therefore V(6,-4)$

$y = x^2 - 12x + 32$

$0 = (x-8)(x-4)$

$x = 8$ $x = 4$

Axis: $x = \frac{8+4}{2} = \frac{12}{2} = 6$

if $x = 6$

$y = (x-8)(x-4)$

$= (6-8)(6-4)$

$= (-2)(2)$

$= -4$

$\therefore V(6,-4)$

$\because$ x-ints are 4 and 8
$\therefore$ the solutions to the original equation are $x = 4$ and $x = 8$.

Last Day's Work: pp. 182-183 # 1 – 4, 6 – 8
p. 184 # 1 – 8 [9, 10]

Today's Work: pp. 186-188 # 1 – 15