10-1 Solving Quadratic Equations by Graphing

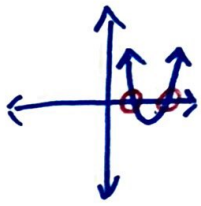
SOLUTION OF A QUADRATIC EQUATION

DEFINITION

THE SOLUTION OF A QUADRATIC EQUATION IS THE VALUE(S) OF X THAT MAKES THE EQUATION TRUE.

CHARACTERISTICS

* SOLUTIONS ARE ALSO CALLED "ROOTS" OR "ZEROES"
* SOLUTIONS CAN BE FOUND BY GRAPHING THE EQUATION AND FINDING ITS "X-INTERCEPT".



EXAMPLES/MODELS

THE SOLUTIONS TO THE EQUATION $x^2-3x+2=0$ ARE $x=1$ AND $x=2$.

$x^2-3x+2=0$

$(1)^2-3(1)+2=0$

$1-3+2=0$

$-2+2=0$

$0=0$ ✓

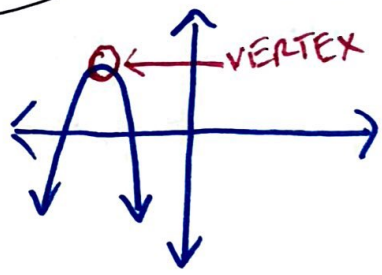
$(2)^2-3(2)+2=0$

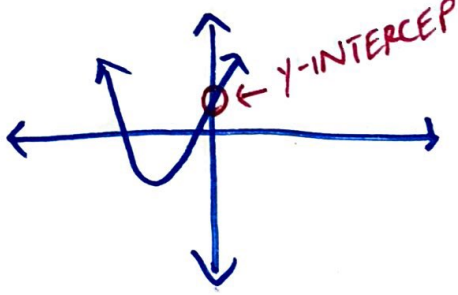
$4-6+2=0$

$-6+6=0$

$0=0$ ✓

NON-EXAMPLES





EXAMPLES:

1. $x^2 - 7x + 10 = 0$

$(x-5)(x-2)=0$

$x=5 \quad x=2$

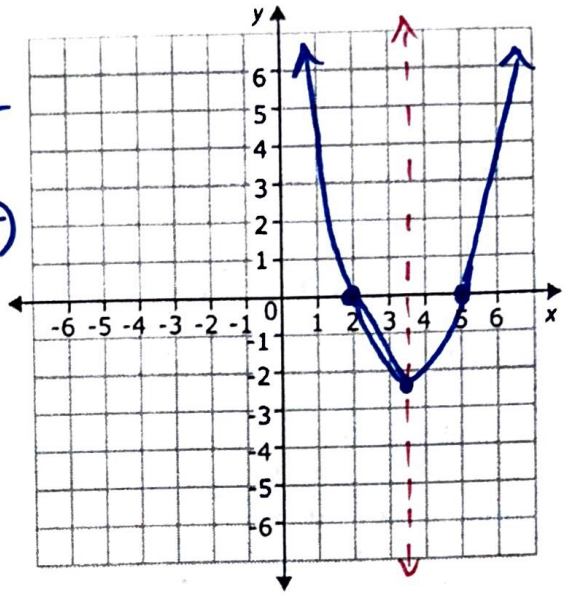
$x = \frac{5+2}{2} = \frac{7}{2} = 3.5$

$(3.5)^2 - 7(3.5) + 10$

$= -2.25$

VERTEX

$(3.5, -2.25)$



$x=2$

$(2)^2 - 7(2) + 10 = 0$

$4 - 14 + 10 = 0$

$-14 + 14 = 0$

$0 = 0$ ✓

$x=5$

$(5)^2 - 7(5) + 10 = 0$

$25 - 35 + 10 = 0$

$-35 + 35 = 0$

$0 = 0$ ✓

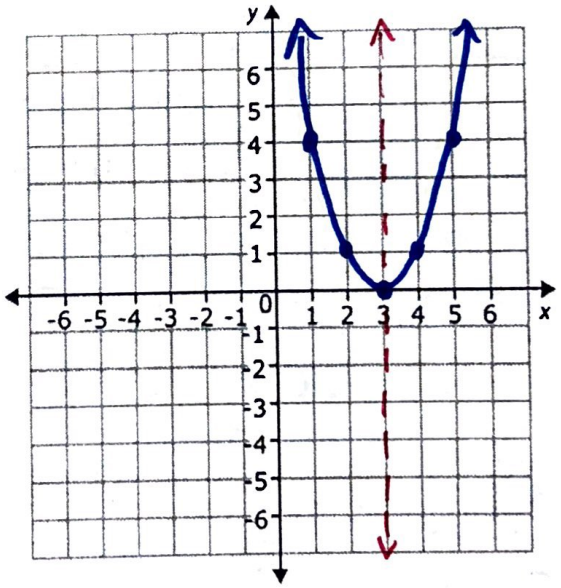
$x=2$ AND $x=5$

2. $x^2 - 6x + 9 = 0$

$(1,4)$

$(2,1)$

VERTEX $(3,0)$



CHECK THE SOLUTION

$x=3$

$(3)^2 - 6(3) + 9 = 0$

$9 - 18 + 9 = 0$

$-18 + 18 = 0$

$0 = 0$ ✓

$x=3$