Find the solutions:

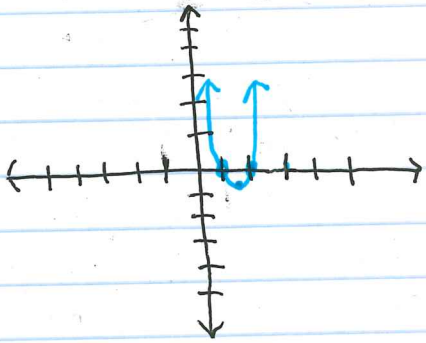
- Identify the vertex, A.O.S., and zero's (solutions)
- Sketch a graph
  - *move all terms to one side of equation

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

Vertex: (1.5, -0.25)

A.O.S.: $x = 1.5$

Zeros: (1,0), (2,0)



2. $3x^2 - 3 = -3$

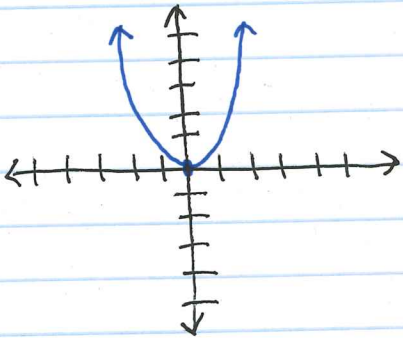
$+3 \quad +3$

$3x^2 = 0$

Vertex: (0,0)

A.O.S.: $x = 0$

Zeros: (0,0)

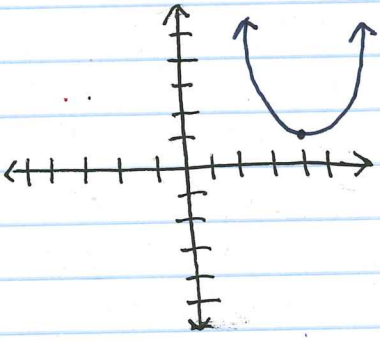


3. $2x^2 - 16x + 33 = 0$

Vertex: (4,1)

A.O.S.: $x = 4$

Zeros: NO solution



Solve

1. $2x^2 + 32 = 0$

$-32 \quad -32$

$\frac{2x^2}{2} = \frac{-32}{2}$

$\sqrt{x^2} = \sqrt{-16}$

$x = \sqrt{-16}$

NO solution

2. $3x^2 - 75 = 0$

$+75 \quad +75$

$\frac{3x^2}{3} = \frac{75}{3}$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

3. $4x^2 - 2 = -2$

$+2 \quad +2$

$\frac{4x^2}{4} = \frac{0}{4}$

$\sqrt{x^2} = \sqrt{0}$

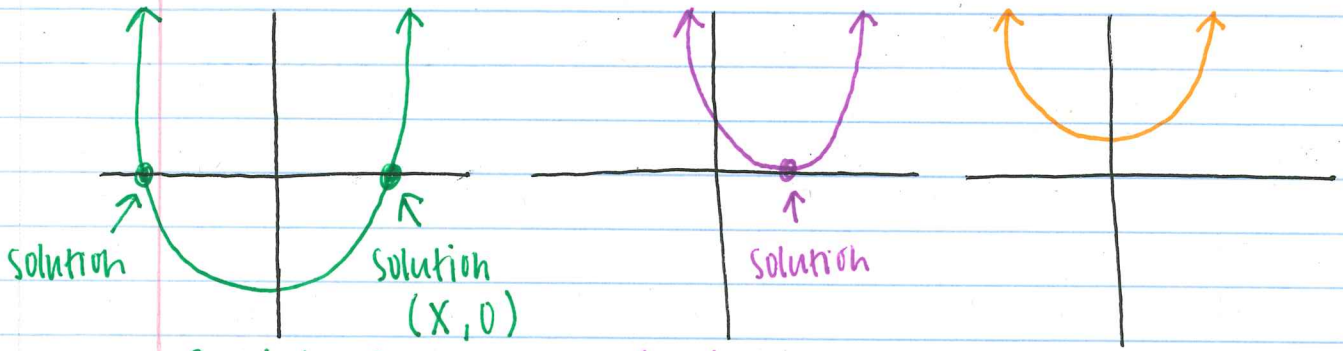
$x = 0$

Solving Quadratic Equations

11-12-18

On a graph...

solutions: where the graph crosses the x-axis
(zeros OR roots)



2 solutions

1 solution (vertex on x-axis)

NO solution (parabola does not touch x-axis)

Solving using square roots √

* only use this method when you're missing the b-term $y = ax^2 + c$

Steps:

1. Get x^2 by itself
   * undo addition/subtraction
   * undo multiplication/division
2. Take the √ of both sides

Example:

$x^2 - 25 = 0$
$+25 \quad +25$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

* If the # under the √ is POSITIVE, you get 2 solutions (+ and −)

* If the # under the √ is ZERO, you get 1 solution... zero

* If the # under the √ is NEGATIVE, you get NO solution.