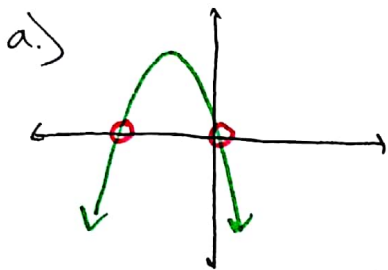
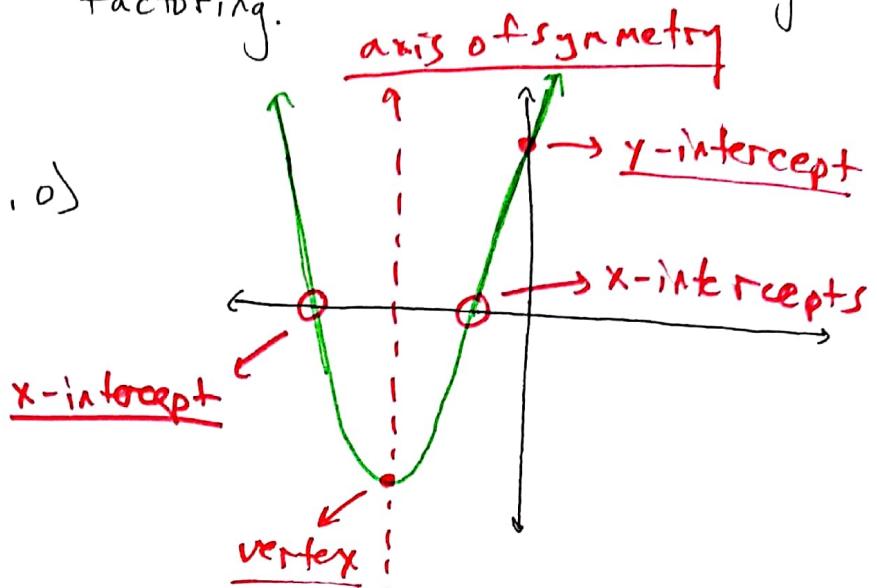


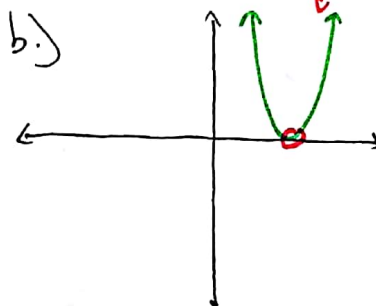
objective: To solve quadratic equations by factoring.

terminology

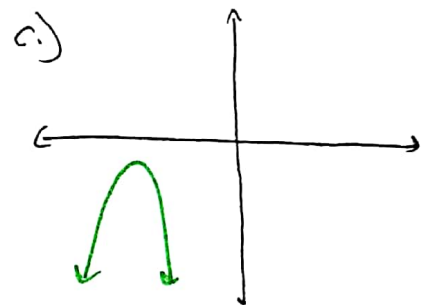
- x-intercepts: $(x, 0)$
- solutions: $x = ?$
- zeros
- roots



2 solutions or zeros



1 solution or zero.



No solutions
2 imaginary solutions

Review Factoring:

$$2x^2 + 5x - 3$$

$$2x \longrightarrow 3$$

$$x \longrightarrow -1$$

$$6x - x = 5x$$

$$(2x - 1)(x + 3)$$

* Zero product property to solve by factoring.

* plug in zero for y, which means always equate to zero to solve.

x-intercepts

$$(1/2, 0)$$

$$(-3, 0)$$

$$y = 2x^2 + 5x - 3$$

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

$$2x - 1 = 0$$

$$x + 3 = 0$$

$$\begin{array}{r} +1 +1 \\ \hline 2x = 1 \end{array}$$

$$\begin{array}{r} -3 -3 \\ \hline x = -3 \end{array}$$

$$\boxed{x = 1/2}$$

$$\boxed{x = -3}$$

Example: $y = 2x^2 + 6x - 20$

$$0 = 2x^2 + 6x - 20$$

$$\cancel{2}(x^2 + 3x - 10) = 0 \quad \frac{0}{2}$$

$$x^2 + 3x - 10 = 0$$

$$\begin{array}{r} x \\ x \end{array} \begin{array}{l} \nearrow 5 \\ \searrow -2 \end{array}$$

$$5x - 2x = 3x$$

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

$$\begin{array}{l} x - 2 = 0 \\ \underline{+2 \quad +2} \end{array} \quad \begin{array}{l} x + 5 = 0 \\ \underline{-5 \quad -5} \end{array}$$

Zeros:

$$\boxed{x = 2}$$

$$\boxed{x = -5}$$

x-int:

$$\boxed{(2, 0)}$$

$$\boxed{(-5, 0)}$$

Example:

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

$$\begin{array}{r} x \\ x \end{array} \begin{array}{l} \nearrow -3 \\ \searrow -3 \end{array}$$

$$(x - 3)(x - 3) = 0$$

$$x - 3 = 0$$

$$\boxed{x = 3}$$
$$\boxed{(3, 0)}$$

Example: $x^2 - 25 = 0$

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

$$x + 5 = 0 \quad x - 5 = 0$$

$$\boxed{x = -5}$$
$$\boxed{(-5, 0)}$$

$$\boxed{x = 5}$$
$$\boxed{(5, 0)}$$

* GCF : 2

* plug in zero for y

* divide by GCF to cancel out