PARABOLA

* Solve for x ≈ x-int on the graph

Vertex form.

$y = a(x-h)^2 + k = 0$

* Vertex (h, k) → opposite sign (Same as line of symetry)

x-int ?

$0 = a(x-h)^2 + k = 0$

Square root method

Complete a square

distribute or foil

STANDARD FORM

$y = ax^2 + bx + c = 0$

* Vertex $\left(-\frac{b}{2a}, ?\right)$
- Line of symetry $x = -\frac{b}{2a}$
- If a, b, c exist $0 = ax^2 + bx + c = 0$ → trials and errors / quadratic formula → x-int $\frac{-b}{2a} + \frac{\sqrt{b^2-4ac}}{2a}$; $\frac{-b}{2a} - \frac{\sqrt{b^2-4ac}}{2a}$
- If $c = 0$, $0 = ax^2 + bx = 0$ → Common factor
- If $b = 0$, $0 = ax^2 + c = 0$ → square root
- If $a = 0$ $0 = bx + c = 0$ → linear.

(Notice this is not a parabola equation)

* Solve for x-int.

factoring ← common factor / Trials & errors

distribute or foil

factor form

$y = (ax+b)(cx+d) = 0$

* x-int ?

Set each factor ( ) = 0

Then solve for x

* vertex ?

(same as line of sym

The x cordinate of the vertex is halfway between the x-intercepts

$\left(\frac{x_1 + x_2}{2}, ?\right)$