

$$\textcircled{1} y = ax^2 + bx + c$$

$$y = x^2 + 16x + 64$$

$$V_{\text{max}}(x) = \frac{-b}{2a}$$

$$64 - 128 + 64$$

$$128 - 128$$

$$\frac{-16}{2} = -8$$

②

$$(-8, 0)$$

$$y = -3x^2 + 12x - 10$$

$$a = -3$$

$$b = 12$$

$$c = -10$$

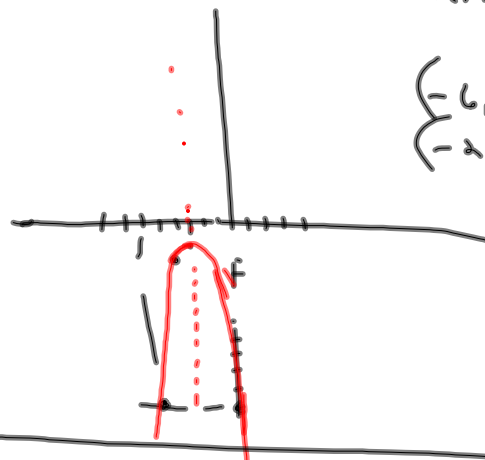
$$\frac{-b}{2a} = \frac{-12}{-6} = 2$$

$$(2, 2)$$

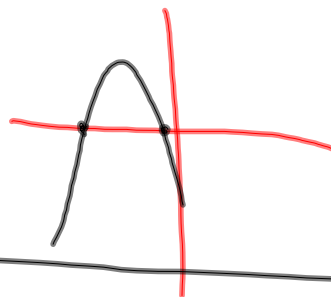
$$\begin{array}{r} -12 \\ +12 \\ \hline -6 \\ \hline 2 \end{array}$$

$$y = -x^2 - 6x - 10$$

$$V_{\text{max}}, (-3, -1)$$



$$\begin{cases} (-6, -10) \\ (-2, -2) \end{cases}$$



Product-Sum-T. Method

$$x^2 - 12x - 28$$

$x^2 - 12x - 28$ Look at The Signs

$ax^2 + bx + c$ $\rightarrow + -$

$a=1$ $a \cdot c = -28$ $b = -12$

What Two Numbers

Factors	
-28	$\rightarrow -12$
-14 · 2	$\rightarrow -3$
-7 · 4	$\rightarrow 3$
-4 · 7	$\rightarrow 12$
-2 · 14	

$(x + 2)(x - 14)$

$x + 2 = 0 \rightarrow -2$

$x - 14 = 0 \rightarrow 14$ Roots

$x^2 + 19x + 90$ $++$

$a \cdot c = 90$

$(x + 10)(x + 9)$ $--$

$(-10, 0)$
 $(-9, 0)$ $>$ Roots

$x^2 - 7x - 18$

$7x^2 - 31x - 20$

$a=7$
 $b=-31$
 $c=-20$

$+ -$
Neg is \uparrow

Factors	
-14 10	
-35 4	$\rightarrow -31$

Grouping

Rewrite trinomial w/ 4 terms.

$7x^2 - 35x + 4x - 20$

$$(7x^2 - 35x)(+4x - 20)$$

$$7x(x-5) \quad 4(x-5)$$

$$(7x+4)(x-5)$$

$$7x+4=0 \quad x-5=0$$

$$\left(-\frac{4}{7}, 0\right) \quad (5, 0)$$

$$b(3b^2 - 5b + 2)$$

$$4x^3 + 43x^2 + 30x$$

$$x(4x^2 + 43x + 30)$$

120		43
	40.3	

$$(4x^2 + 40x)(+3x + 30)$$

$$4x(x+10) \quad 3(x+10)$$

$$(4x+3)(x+10)$$

