Turning Standard form into graphing using CTS

Monday, August 28, 2017 10:47 AM

Complete the square

Background:

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

$x^2 + 2x - 3x - 6$

$x^2 - 1x - 6$ Cool Kid!

desired

$y = (x-6)^2$ ← graphing form $(x-6)(x-6)$

$y = x^2 - 12x + 36$ ← Standard form

Background.

Factor $x^2 - 10x + 25$

$(x-5)(x-5)$

$(x-5)^2$

$x^2 - 12x + 36$

$(x-6)(x-6)$

$(x-6)^2$

$x^2 + 2x + 1$

$(x+1)^2$ lovely

Perfect square trinomials.

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not perfect

$x^2 + 3x + 2$

$(x+2)(x+1)$ no help

Make it happen.

$y = x^2 - 10x + 25$

$\downarrow$

5

WORK

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

what I want: $+25$ how I pay: -25

$y = (x-5)^2 - 23$

Ex

$y = x^2 - 6x + 1$

$x^2 - 6x \qquad +1$

$+9 \qquad -9$

$y = (x-3)^2 - 8$

Ex:

$y = x^2 + 2x - 9$

$+1 \quad -1$

$y = (x+1)^2 - 10$

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3. combine

$y = x^2 - 8x + 1$

$+16 \quad -16$

squared 2

$y = (x - 4)^2 - 15$

half 1

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

$+36 \quad -36$

$y = (x + 6)^2 - 46$

① half
② squared
③ combine

$y = x^2 + 1x + 6$

$+\frac{1}{4} \quad -\frac{1}{4}$

$y = (x + \frac{1}{2})^2 + 5\frac{3}{4}$

$y = x^2 + 20x + 14$

$$x^2 + 20x + 100 + 14 - 100$$

$$y = (x+10)^2 - 86$$