

Complete the Square:

to solve quadratic equation

① always get x^2 coefficient = 1

example

$$-3x^2 + 12x + 16.2 = 0$$

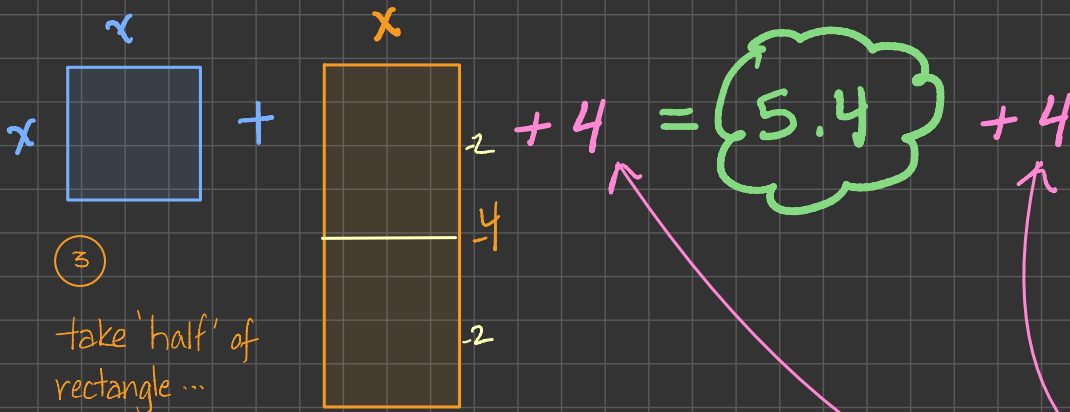
÷ b/s by -3

$$x^2 - 4x - 5.4 = 0$$

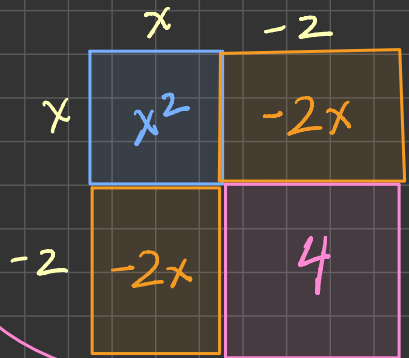
② move constant to other side of equation

$$x^2 - 4x = 5.4$$

⑤ balance the equation



③ take 'half' of rectangle ...



⑥ PST

$$x^2 - 4x + 4 = 9.4$$

④ ... complete the square

⑦ PST is always (binomial)²

$$(x-2)^2 = 9.4$$

look at dimensions of square

⑧ solve by isolation

$$\sqrt{(x-2)^2} = \pm \sqrt{9.4}$$

$$x-2 = \pm \sqrt{9.4}$$

$$x = \pm \sqrt{9.4} + 2$$

⑨

$$\therefore x = \{-1.07, 5.07\}$$