

## COMPLETING THE SQUARE

June 7

$$\text{Trinomial Squares } a^2 + 2ab + b^2 = (a + b)^2$$

$$a^2 - 2ab + b^2 = (a - b)^2$$

- 1 Find the value of  $c$  that completes the trinomial square. Factor the trinomial square.

$$x^2 + 10x + c = x^2 + 10x + 25 = (x + 5)^2$$

$x^2$        $2(5x)$        $5^2$

$$x^2 - 12x + c = x^2 - 12x + 36 = (x - 6)^2$$

$6^2$

$$x^2 + 40x + c = x^2 + 40x + 400 = (x + 20)^2$$

$40 \div 2$        $20^2$

Solve by completing the square:

②  $x^2 - 4x - 8 = 0$  steps:

$$x^2 - 4x = 8$$

C.T.S.  $x^2 - 4x + \frac{4}{2} = 8 + \underline{4}$

$$\left(\frac{4}{2}\right) \sqrt{(x-2)^2} = \sqrt{12}$$

$$x - 2 = \pm 2\sqrt{3}$$

$$x = 2 \pm 2\sqrt{3}$$

$$\textcircled{3} x^2 - 6x - 15 = 0 \quad \textcircled{4} x^2 + 30x + 224 = 0$$

$$\begin{aligned} \left(\frac{-6}{2}\right)^2 x^2 - 6x + 9 &= 15 + 9 & x^2 + 30x + 225 &= -224 \\ & & & + 225 \\ \sqrt{(x-3)^2} &= \sqrt{24} & \sqrt{(x+15)^2} &= \sqrt{1} \end{aligned}$$

$$x - 3 = \pm 2\sqrt{6}$$

$$x = 3 \pm 2\sqrt{6}$$

$$x + 15 = \pm 1$$

$$x = -15 \pm 1$$

-14, -16