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3. Solve the following quadratic equations by using the factorization

(i)  $x^2 + 9x + 14 = 0$

$$\sqrt{9^2 - 4 \cdot 1 \cdot 14} = 5$$

$$x_1 = \frac{-9+5}{2 \cdot 1}, x_2 = \frac{-9-5}{2 \cdot 1}$$

$$x = \frac{-9+5}{2 \cdot 1} = -2$$

$$x = \frac{-9-5}{2 \cdot 1} = -7$$

(ii)  $x^2 + 9x + 14 = 0$

$$x_{1,2} =$$

$$x_{1,2} = \frac{-9 \pm \sqrt{9^2 - 4 \cdot 1 \cdot 14}}{2 \cdot 1}$$

$$\sqrt{9^2 - 4 \cdot 1 \cdot 14} = 5$$

$$x_{1,2} = \frac{9 \pm 5}{2 \cdot 1}$$

(iii)  $x^2 + 8x - 20 = 0$

$$x^2 + 8x - 20$$

$$= (x^2 - 2x) + (10x - 20)$$

$$x = (x-2)(x+10)$$

(iv)  $x^2 - 49 = 0$

$$x^2 - 49 + 49 = 0 + 49$$

$$x^2 = 49$$

$$x = 7, x = -7$$