

59. 2次方程式（複素数解）

$$(1) x = \pm 3\sqrt{2}i \quad (2) x = \frac{-5 \pm \sqrt{3}i}{2} \quad (3) x = 2 \pm \sqrt{3}i$$

$$(4) x = \frac{-3 \pm \sqrt{31}i}{10} \quad (5) x = -2\sqrt{3} \pm i \quad (6) x = \frac{1 \pm \sqrt{14}i}{3}$$

次の方程式を解け。

$$(1) x^2 = -18$$

$$x = \pm \sqrt{-18} = \pm 3\sqrt{2}i$$

$$(2) x^2 + 5x + 7 = 0$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 1 \cdot 7}}{2 \cdot 1} = \frac{-5 \pm \sqrt{-3}}{2} = \frac{-5 \pm \sqrt{3}i}{2}$$

$$(3) -x^2 + 4x - 7 = 0$$

$$x^2 - 4x + 7 = 0$$

$$x = -(-2) \pm \sqrt{(-2)^2 - 1 \cdot 7} = 2 \pm \sqrt{-3} = 2 \pm \sqrt{3}i$$

$$(4) 5x^2 + 3x + 2 = 0$$

$$x = \frac{-3 \pm \sqrt{3^2 - 4 \cdot 5 \cdot 2}}{2 \cdot 5} = \frac{-3 \pm \sqrt{-31}}{10} = \frac{-3 \pm \sqrt{31}i}{10}$$

$$(5) x^2 + 4\sqrt{3}x = -13$$

$$x^2 + 4\sqrt{3}x + 13 = 0$$

$$x = -2\sqrt{3} \pm \sqrt{(2\sqrt{3})^2 - 1 \cdot 13} = -2\sqrt{3} \pm \sqrt{-1} = -2\sqrt{3} \pm i$$

$$(6) \frac{x^2 + 1}{2} = \frac{x - 1}{3}$$

$$3(x^2 + 1) = 2(x - 1)$$

$$3x^2 - 2x + 5 = 0$$

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 3 \cdot 5}}{3} = \frac{1 \pm \sqrt{-14}}{3} = \frac{1 \pm \sqrt{14}i}{3}$$