



中学3年生の数学(4)

【1】【2】の復習「平方根のいろいろな計算」▶



【1】次の計算をなさい。

$$\begin{aligned} (1) \sqrt{3}(\sqrt{6} + \sqrt{2}) &= \sqrt{3} \times \sqrt{6} + \sqrt{3} \times \sqrt{2} \\ &= \sqrt{3} \times \sqrt{3} \times \sqrt{2} + \sqrt{6} \\ &= 3\sqrt{2} + \sqrt{6} \end{aligned}$$

$$\begin{aligned} (2) 4\sqrt{2} - 4\sqrt{6} \times \sqrt{12} &= 4\sqrt{2} - 4\sqrt{72} \\ &= 4\sqrt{2} - 4 \times 6\sqrt{2} \\ &= 4\sqrt{2} - 24\sqrt{2} \\ &= -20\sqrt{2} \end{aligned}$$

$$\begin{aligned} (3) (\sqrt{5} - 2)(\sqrt{5} - 3) &= (\sqrt{5})^2 + (-2 - 3)\sqrt{5} + (-2) \times (-3) \\ &= 5 - 5\sqrt{5} + 6 \\ &= 11 - 5\sqrt{5} \end{aligned}$$

$$\begin{aligned} (4) (3\sqrt{2} - \sqrt{3})^2 &= (3\sqrt{2})^2 - 2 \times \sqrt{3} \times 3\sqrt{2} + (\sqrt{3})^2 \\ &= 18 - 6\sqrt{6} + 3 \\ &= 21 - 6\sqrt{6} \end{aligned}$$

【2】 $x = 2 + \sqrt{7}$ のとき、次の計算をなさい。

$$\begin{aligned} (1) x^2 - 7 &= (x + \sqrt{7})(x - \sqrt{7}) \\ &= \{(2 + \sqrt{7}) + \sqrt{7}\} \{(2 + \sqrt{7}) - \sqrt{7}\} \\ &= 2(2 + 2\sqrt{7}) \\ &= 4 + 4\sqrt{7} \end{aligned}$$

$$\begin{aligned} (2) x^2 - x - 2 &= (x + 1)(x - 2) \\ &= (2 + \sqrt{7} + 1)(2 + \sqrt{7} - 2) \\ &= (3 + \sqrt{7}) \times \sqrt{7} \\ &= 7 + 3\sqrt{7} \end{aligned}$$

【3】の復習「2次方程式」▶



【3】次の方程式を解きなさい。

$$\begin{aligned} (1) (x + 1)(x - 4) &= 0 \\ x + 1 = 0 \text{ または } x - 4 &= 0 \end{aligned}$$

$$\begin{aligned} (2) x^2 - x - 12 &= 0 \\ (x + 3)(x - 4) &= 0 \quad \left. \begin{array}{l} \text{左辺を因数分解する} \\ \end{array} \right\} \\ x + 3 = 0 \text{ または } x - 4 &= 0 \end{aligned}$$

答え $x = -1, x = 4$

答え $x = -3, x = 4$

$$\begin{aligned} (3) 2x^2 - 6x - 20 &= 0 \\ x^2 - 3x - 10 &= 0 \quad \left. \begin{array}{l} \text{両辺を2でわる} \\ \end{array} \right\} \\ (x + 2)(x - 5) &= 0 \quad \left. \begin{array}{l} \text{左辺を因数分解する} \\ \end{array} \right\} \\ x + 2 = 0 \text{ または } x - 5 &= 0 \end{aligned}$$

$$\begin{aligned} (4) 5x^2 - 15 &= 0 \\ 5x^2 &= 15 \\ x^2 &= 3 \\ x &= \pm\sqrt{3} \end{aligned}$$

答え $x = -2, x = 5$

答え $x = \pm\sqrt{3}$