

平方根 式の値

NO. 3

名前

／5 点

1 $x = 2 + \sqrt{3}$ $y = 2 - \sqrt{3}$ のとき、
次の式の値を求めなさい。

① $x^2 - y^2$

② $x^2 + y^2 + 2xy$

2 $x = \sqrt{\frac{2}{3}} + 1$ $y = \sqrt{\frac{2}{3}} - 1$ のとき
次の式の値を求めなさい。

① $x^2 - y^2$

② $x^2 + y^2 - 5xy$

3 $a = \sqrt{3} + 2$ のとき、
 $a^2 - 4a$ の値を求めなさい。

解答

1

$$\textcircled{1} \quad x^2 - y^2 = (x + y)(x - y)$$

$$x + y = 4 \quad x - y = 2\sqrt{3}$$

$$x^2 - y^2 = 4 \times 2\sqrt{3} = 8\sqrt{3}$$

$$\textcircled{2} \quad x^2 + y^2 + 2xy = (x + y)^2$$

$$= 4^2 = 16$$

2

$$\textcircled{1} \quad x + y = 2\sqrt{\frac{2}{3}} \quad x - y = 2$$

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

$$\begin{aligned} \textcircled{2} \quad &x^2 + y^2 - 5xy \\ &= x^2 + y^2 - 2xy - 3xy \\ &= (x - y)^2 - 3xy \end{aligned}$$

$$\begin{aligned} xy &= \left(\sqrt{\frac{2}{3}} + 1\right)\left(\sqrt{\frac{2}{3}} - 1\right) \\ &= \frac{2}{3} - 1 = -\frac{1}{3} \end{aligned}$$

$$2^2 - 3 \times \left(-\frac{1}{3}\right) = 4 + 1 = 5$$

3

$$\begin{aligned} a^2 - 4a &= a(a - 4) \\ &= (\sqrt{3} + 2)(\sqrt{3} - 2) \\ &= 3 - 4 = -1 \end{aligned}$$