

平方根 式の値 1

NO. 1

名前

/5 点

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

① $x^2 - y^2$

② $x^2 + y^2 + 2xy$

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

① $x^2 - y^2$

② $3x^2 + 3y^2 - 6xy$

3 $a = \sqrt{3} - 1$ $b = \sqrt{5} - 1$ のとき、
 $ab + a + b + 1$ の値を求めなさい。

解答

1

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

$$\begin{aligned} x + y &= \sqrt{3} + 1 + \sqrt{3} - 1 \\ &= 2\sqrt{3} \end{aligned}$$

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

$$(x + y)(x - y) = 2\sqrt{3} \times 2 = 4\sqrt{3}$$

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

$$= (2\sqrt{3})^2 = 12$$

2

$$\textcircled{1} \quad x + y = 2\sqrt{\frac{2}{3}} \quad x - y = 4$$

$$\begin{aligned} x^2 - y^2 &= (x + y)(x - y) \\ &= 2\sqrt{\frac{2}{3}} \times 4 = \frac{8\sqrt{6}}{3} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad &3x^2 + 3y^2 - 6xy \\ &= 3(x^2 - 2xy + y^2) \\ &= 3(x - y)^2 \\ &= 3 \times 4^2 = 48 \end{aligned}$$

3

$$\begin{aligned} &ab + a + b + 1 \\ &= a(b + 1) + b + 1 \\ &= (a + 1)(b + 1) \\ &= \sqrt{3} \times \sqrt{5} = \sqrt{15} \end{aligned}$$