

平方根の四則混合計算 random練習

1 次の計算をしなさい。

(1) $\sqrt{18} + \sqrt{128}$

答

(2) $2\sqrt{12} - \sqrt{75}$

答

(3) $\sqrt{6} \times \sqrt{3} - \sqrt{8}$

答

(4) $\sqrt{15} \times 2\sqrt{5} + \sqrt{72} \div \sqrt{6}$

答

(5) $\sqrt{2} \times (-\sqrt{6}) + \frac{6}{\sqrt{12}}$

答

(6) $3\sqrt{2} - \frac{7}{\sqrt{2}}$

答

(7) $2\sqrt{2}(\sqrt{12} - \sqrt{18})$

答

(8) $\frac{6}{\sqrt{3}} + \frac{\sqrt{6}}{\sqrt{2}}$

答

(9) $\sqrt{45} + \sqrt{2} \times \sqrt{10}$

答

(10) $\frac{8}{\sqrt{2}} - 7\sqrt{6} \times \sqrt{12}$

答

2 次の計算をしなさい。

(1) $(\sqrt{3}+2)(\sqrt{3}+4)$

答

(2) $(\sqrt{3}+2)^2$

答

(3) $(\sqrt{6}+4)(\sqrt{6}-4)$

答

(4) $(\sqrt{6}-\sqrt{5})(\sqrt{6}+\sqrt{20})$

答

(5) $(\sqrt{6}-\sqrt{2})^2-(\sqrt{7}+3)(\sqrt{7}-3)$

答

3 次の問いに答えなさい。

(1) $x=4+\sqrt{5}$ のとき、 $x^2-8x+16$ の値を求めなさい。

答

(2) $x=\sqrt{2}-1$ のとき、 x^2-x-2 の値を求めなさい。

答

1 次の計算をしなさい。

(1) $\sqrt{18} + \sqrt{128}$

★
 $= 3\sqrt{2} + 8\sqrt{2}$
 $= 11\sqrt{2}$

答 $11\sqrt{2}$

(2) $2\sqrt{12} - \sqrt{75}$

★
 $= 2 \times 2\sqrt{3} - 5\sqrt{3}$
 $= 4\sqrt{3} - 5\sqrt{3}$
 $= -\sqrt{3}$

答 $-\sqrt{3}$

(3) $\sqrt{6} \times \sqrt{3} - \sqrt{8}$

★
 $= \sqrt{18} - 2\sqrt{2}$
 $= 3\sqrt{2} - 2\sqrt{2}$
 $= \sqrt{2}$

答 $\sqrt{2}$

(4) $\sqrt{15} \times 2\sqrt{5} + \sqrt{72} \div \sqrt{6}$

★
 $= 10\sqrt{3} + 2\sqrt{3}$
 $= 12\sqrt{3}$

答 $12\sqrt{3}$

(5) $\sqrt{2} \times (-\sqrt{6}) + \frac{6}{\sqrt{12}}$

★
 $= -2\sqrt{3} + \frac{6 \times \sqrt{3}}{2\sqrt{3} \times \sqrt{3}}$
 $= -2\sqrt{3} + \sqrt{3}$
 $= -\sqrt{3}$

答 $-\sqrt{3}$

(6) $3\sqrt{2} - \frac{7}{\sqrt{2}}$

★
 $= 3\sqrt{2} - \frac{7 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$
 $= 3\sqrt{2} - \frac{7\sqrt{2}}{2} = -\frac{\sqrt{2}}{2}$

答 $-\frac{\sqrt{2}}{2}$

(7) $2\sqrt{2}(\sqrt{12} - \sqrt{18})$

★
 $= 2\sqrt{2}(2\sqrt{3} - 3\sqrt{2})$
 $= 4\sqrt{6} - 12$

答 $4\sqrt{6} - 12$

(8) $\frac{6}{\sqrt{3}} + \frac{\sqrt{6}}{\sqrt{2}}$

★
 $= \frac{6 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} + \sqrt{3} = \frac{6\sqrt{3}}{3} + \sqrt{3}$
 $= 2\sqrt{3} + \sqrt{3} = 3\sqrt{3}$

答 $3\sqrt{3}$

(9) $\sqrt{45} + \sqrt{2} \times \sqrt{10}$

★
 $= 3\sqrt{5} + \sqrt{20}$
 $= 3\sqrt{5} + 2\sqrt{5}$
 $= 5\sqrt{5}$

答 $5\sqrt{5}$

(10) $\frac{8}{\sqrt{2}} - 7\sqrt{6} \times \sqrt{12}$

★
 $= \frac{8 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} - 7 \times 6\sqrt{2} = \frac{8\sqrt{2}}{2} - 42\sqrt{2}$
 $= 4\sqrt{2} - 42\sqrt{2}$
 $= -38\sqrt{2}$

答 $-38\sqrt{2}$

2 次の計算をしなさい。

(1) $(\sqrt{3}+2)(\sqrt{3}+4)$

★

$$\begin{aligned} &= (\sqrt{3})^2 + (2+4)\sqrt{3} + 2 \times 4 \\ &= 3 + 6\sqrt{3} + 8 \\ &= 11 + 6\sqrt{3} \end{aligned}$$

答 $11+6\sqrt{3}$

(2) $(\sqrt{3}+2)^2$

★

$$\begin{aligned} &= (\sqrt{3})^2 + 2 \times \sqrt{3} \times 2 + 2^2 \\ &= 3 + 4\sqrt{3} + 4 \\ &= 7 + 4\sqrt{3} \end{aligned}$$

答 $7+4\sqrt{3}$

(3) $(\sqrt{6}+4)(\sqrt{6}-4)$

★

$$\begin{aligned} &= (\sqrt{6})^2 - 4^2 \\ &= 6 - 16 \\ &= -10 \end{aligned}$$

答 5

答 -10

(4) $(\sqrt{6}-\sqrt{5})(\sqrt{6}+\sqrt{20})$

★

$$\begin{aligned} &= (\sqrt{6}-\sqrt{5})(\sqrt{6}+2\sqrt{5}) \\ &= (\sqrt{6})^2 + (2\sqrt{5}-\sqrt{5}) \times \sqrt{6} - \sqrt{5} \times 2\sqrt{5} \\ &= 6 + \sqrt{30} - 10 = -4 + \sqrt{30} \end{aligned}$$

答 $-4+\sqrt{30}$

(5) $(\sqrt{6}-\sqrt{2})^2 - (\sqrt{7}+3)(\sqrt{7}-3)$

★

$$\begin{aligned} &= 6 - 2\sqrt{12} + 2 - (7-9) \\ &= 8 - 4\sqrt{3} + 2 \\ &= 10 - 4\sqrt{3} \end{aligned}$$

答 $10-4\sqrt{3}$

3 次の問いに答えなさい。

(1) $x=4+\sqrt{5}$ のとき、 $x^2-8x+16$ の値を求めなさい。

★

$$\begin{aligned} x^2 - 8x + 16 &= (x-4)^2 \\ (4+\sqrt{5}-4)^2 &= (\sqrt{5})^2 \\ &= 5 \end{aligned}$$

(2) $x=\sqrt{2}-1$ のとき、 x^2-x-2 の値を求めなさい。

★

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

答 $2-3\sqrt{2}$
