

平方根の四則の混合算

学習日 月 日

年 組 番 氏名

(1) 次の計算をなさい。

① $3\sqrt{12} + \sqrt{27}$

② $3\sqrt{24} - 3\sqrt{6}$

③ $-2\sqrt{32} + \sqrt{72}$

④ $3\sqrt{5} - \sqrt{125}$

⑤ $\sqrt{2} - \sqrt{27} + 2\sqrt{8}$

⑥ $4\sqrt{48} - 2\sqrt{3} + \sqrt{27}$

(2) 次の計算をなさい。

① $\sqrt{3} \times \sqrt{2} + 5\sqrt{6}$

② $\sqrt{2} \times \sqrt{5} - 2\sqrt{10}$

③ $\sqrt{2}(\sqrt{3} - 3)$

④ $\sqrt{3}(4\sqrt{3} + \sqrt{12})$

⑤ $\sqrt{24} + \frac{3}{\sqrt{3}} - 2\sqrt{2} \div \sqrt{3}$

⑥ $\sqrt{5} \div \sqrt{2} - \frac{\sqrt{2}}{\sqrt{5}} + \sqrt{10}$

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(1) 次の計算をなさい。

$$\begin{aligned} \textcircled{1} \quad & 3\sqrt{12} + \sqrt{27} \\ &= 3\sqrt{4 \times 3} + \sqrt{9 \times 3} \\ &= 6\sqrt{3} + 3\sqrt{3} \\ &= 9\sqrt{3} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 3\sqrt{24} - 3\sqrt{6} \\ &= 3\sqrt{4 \times 6} - 3\sqrt{6} \\ &= 6\sqrt{6} - 3\sqrt{6} \\ &= 3\sqrt{6} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & -2\sqrt{32} + \sqrt{72} \\ &= -2\sqrt{16 \times 2} + \sqrt{36 \times 2} \\ &= -8\sqrt{2} + 6\sqrt{2} \\ &= -2\sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 3\sqrt{5} - \sqrt{125} \\ &= 3\sqrt{5} - \sqrt{25 \times 5} \\ &= 3\sqrt{5} - 5\sqrt{5} \\ &= -2\sqrt{5} \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & \sqrt{2} - \sqrt{27} + 2\sqrt{8} \\ &= \sqrt{2} - 3\sqrt{3} + 2\sqrt{4 \times 2} \\ &= \sqrt{2} - 3\sqrt{3} + 4\sqrt{2} \\ &= 5\sqrt{2} - 3\sqrt{3} \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & 4\sqrt{48} - 2\sqrt{3} + \sqrt{27} \\ &= 16\sqrt{3} - 2\sqrt{3} + 3\sqrt{3} \\ &= 17\sqrt{3} \end{aligned}$$

(2) 次の計算をなさい。

$$\begin{aligned} \textcircled{1} \quad & \sqrt{3} \times \sqrt{2} + 5\sqrt{6} \\ &= \sqrt{6} + 5\sqrt{6} \\ &= 6\sqrt{6} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & \sqrt{2} \times \sqrt{5} - 2\sqrt{10} \\ &= \sqrt{10} - 2\sqrt{10} \\ &= -\sqrt{10} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & \sqrt{2}(\sqrt{3} - 3) \\ &= \sqrt{6} - 3\sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & \sqrt{3}(4\sqrt{3} + \sqrt{12}) \\ &= \sqrt{3}(4\sqrt{3} + 2\sqrt{3}) \\ &= \sqrt{3} \times 6\sqrt{3} \\ &= 18 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & \sqrt{24} + \frac{3}{\sqrt{3}} - 2\sqrt{2} \div \sqrt{3} \\ &= 2\sqrt{6} + \frac{3}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} - \frac{2\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} \\ &= 2\sqrt{6} + \sqrt{3} - \frac{2}{3}\sqrt{6} \\ &= \frac{4}{3}\sqrt{6} + \sqrt{3} \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & \sqrt{5} \div \sqrt{2} - \frac{\sqrt{2}}{\sqrt{5}} + \sqrt{10} \\ &= \frac{\sqrt{5}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} - \frac{\sqrt{2}}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} + \sqrt{10} \\ &= \frac{\sqrt{10}}{2} - \frac{\sqrt{10}}{5} + \sqrt{10} \\ &= \left(\frac{5}{10} - \frac{2}{10} + \frac{10}{10}\right)\sqrt{10} \\ &= \frac{13}{10}\sqrt{10} \end{aligned}$$