

平方根の計算練習（2）

学習日 月 日

年 組 番 氏名

(1) 次の計算をなさい。

① $\sqrt{6}(\sqrt{8} - 2\sqrt{3})$

② $(6\sqrt{2} - \sqrt{12}) \div \sqrt{6}$

⑨ $(\sqrt{18} + 4)(3\sqrt{2} - 4)$

⑩ $(\sqrt{5} + \sqrt{3})^2 - \sqrt{60}$

③ $\sqrt{3}(\sqrt{15} - 4) - \sqrt{75}$

④ $\frac{1}{\sqrt{2}}(\sqrt{32} - 1) + \sqrt{18}$

⑪ $(\sqrt{2} - 3)^2 + \frac{4}{\sqrt{2}}$

⑫ $\frac{1}{\sqrt{18}} - \frac{1}{\sqrt{6}} \div \sqrt{27}$

⑤ $(2\sqrt{10} + \sqrt{5})^2$

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

⑬ $(\sqrt{6} - \sqrt{2})^2 + 4\sqrt{3}$

⑭ $(2 + \sqrt{5})^2 - 4(2 + \sqrt{5})$

⑦ $(3\sqrt{7} - 5)(3\sqrt{7} + 2)$

⑧ $\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)^2$

⑮ $(-7 + 4\sqrt{3})(2 + \sqrt{3})^2$

⑯ $(3\sqrt{2} + \sqrt{3})^2 - (3\sqrt{2} - \sqrt{3})^2$

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(1) 次の計算をなさい。

$$\begin{aligned} \textcircled{1} \quad & \sqrt{6}(\sqrt{8} - 2\sqrt{3}) \\ &= 4\sqrt{3} - 6\sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & (6\sqrt{2} - \sqrt{12}) \div \sqrt{6} \\ &= \frac{6\sqrt{2}}{\sqrt{6}} - \frac{\sqrt{12}}{\sqrt{6}} \\ &= 2\sqrt{3} - \sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{9} \quad & (\sqrt{18} + 4)(3\sqrt{2} - 4) \\ &= (3\sqrt{2} + 4)(3\sqrt{2} - 4) \\ &= 18 - 16 \\ &= 2 \end{aligned}$$

$$\begin{aligned} \textcircled{10} \quad & (\sqrt{5} + \sqrt{3})^2 - \sqrt{60} \\ &= 5 + 2\sqrt{15} + 3 - 2\sqrt{15} \\ &= 8 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & \sqrt{3}(\sqrt{15} - 4) - \sqrt{75} \\ &= 3\sqrt{5} - 4\sqrt{3} - 5\sqrt{3} \\ &= 3\sqrt{5} - 9\sqrt{3} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & \frac{1}{\sqrt{2}}(\sqrt{32} - 1) + \sqrt{18} \\ &= \frac{\sqrt{32}}{\sqrt{2}} - \frac{1}{\sqrt{2}} + \sqrt{18} \\ &= 4 - \frac{\sqrt{2}}{2} + 3\sqrt{2} \\ &= 4 + \frac{5\sqrt{2}}{2} \end{aligned}$$

$$\begin{aligned} \textcircled{11} \quad & (\sqrt{2} - 3)^2 + \frac{4}{\sqrt{2}} \\ &= 2 - 6\sqrt{2} + 9 + 2\sqrt{2} \\ &= 11 - 4\sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{12} \quad & \frac{1}{\sqrt{18}} - \frac{1}{\sqrt{6}} \div \sqrt{27} \\ &= \frac{1}{3\sqrt{2}} - \frac{1}{\sqrt{6}} \times \frac{1}{\sqrt{9}\sqrt{3}} \\ &= \frac{1}{3\sqrt{2}} - \frac{1}{9\sqrt{2}} \\ &= \left(\frac{1}{3} - \frac{1}{9}\right) \times \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{9} \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & (2\sqrt{10} + \sqrt{5})^2 \\ &= 40 + 20\sqrt{2} + 5 \\ &= 45 + 20\sqrt{2} \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & (5\sqrt{2} - \sqrt{3})(5\sqrt{2} + \sqrt{3}) \\ &= 50 - 3 \\ &= 47 \end{aligned}$$

$$\begin{aligned} \textcircled{13} \quad & (\sqrt{6} - \sqrt{2})^2 + 4\sqrt{3} \\ &= 6 - 4\sqrt{3} + 2 + 4\sqrt{3} \\ &= 8 \end{aligned}$$

$$\begin{aligned} \textcircled{14} \quad & (2 + \sqrt{5})^2 - 4(2 + \sqrt{5}) \\ &= 4 + 4\sqrt{5} + 5 - 8 - 4\sqrt{5} \\ &= 1 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad & (3\sqrt{7} - 5)(3\sqrt{7} + 2) \\ &= 63 - 9\sqrt{7} - 10 \\ &= 53 - 9\sqrt{7} \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad & \left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)^2 \\ &= 3 - 2 + \frac{1}{3} \\ &= \frac{4}{3} \end{aligned}$$

$$\begin{aligned} \textcircled{15} \quad & (-7 + 4\sqrt{3})(2 + \sqrt{3})^2 \\ &= (-7 + 4\sqrt{3})(4 + 4\sqrt{3} + 3) \\ &= (-7 + 4\sqrt{3})(7 + 4\sqrt{3}) \\ &= (4\sqrt{3})^2 - 7^2 \\ &= 48 - 49 \\ &= -1 \end{aligned}$$

$$\begin{aligned} \textcircled{16} \quad & (3\sqrt{2} + \sqrt{3})^2 - (3\sqrt{2} - \sqrt{3})^2 \\ &= (3\sqrt{2})^2 + 6\sqrt{6} + (\sqrt{3})^2 \\ &\quad - (3\sqrt{2})^2 + 6\sqrt{6} - (\sqrt{3})^2 \\ &= 12\sqrt{6} \end{aligned}$$