

確認問題

根号を含む式の計算 (2)

53 次の計算をなさい。

ふりかえろう!

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$$\begin{aligned}
 (1) \quad & \sqrt{3}(\sqrt{2} + \sqrt{7}) \\
 &= \sqrt{3} \times \sqrt{2} + \sqrt{3} \times \sqrt{7} \\
 &= \sqrt{6} + \sqrt{21}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & \sqrt{5}(\sqrt{5} - 4) \\
 &= \sqrt{5} \times \sqrt{5} - \sqrt{5} \times 4 \\
 &= 5 - 4\sqrt{5}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & (3\sqrt{7})^2 \\
 &= 3\sqrt{7} \times 3\sqrt{7} \\
 &= 3 \times 3 \times \sqrt{7} \times \sqrt{7} \\
 &= 3^2 \times (\sqrt{7})^2 \\
 &= 9 \times 7 = \mathbf{63}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & (-2\sqrt{5})^2 \\
 &= (-2\sqrt{5}) \times (-2\sqrt{5}) \\
 &= (-2) \times (-2) \times \sqrt{5} \times \sqrt{5} \\
 &= (-2)^2 \times (\sqrt{5})^2 \\
 &= 4 \times 5 = \mathbf{20}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & (-\sqrt{3})^3 \\
 &= (-\sqrt{3}) \times (-\sqrt{3}) \times (-\sqrt{3}) \\
 &= (-\sqrt{3})^2 \times (-\sqrt{3}) \\
 &= 3 \times (-\sqrt{3}) \\
 &= \mathbf{-3\sqrt{3}}
 \end{aligned}$$

$$\begin{aligned}
 (6) \quad & \sqrt{15}(\sqrt{3} - \sqrt{5}) \\
 &= \sqrt{15} \times \sqrt{3} - \sqrt{15} \times \sqrt{5} \\
 &= \sqrt{45} - \sqrt{75} \\
 &= \sqrt{3^2 \times 5} - \sqrt{3 \times 5^2} \\
 &= 3\sqrt{5} - 5\sqrt{3}
 \end{aligned}$$

$$\begin{array}{r}
 3 \overline{) 45} \\
 \underline{30} \\
 15
 \end{array}$$

$$\begin{array}{r}
 3 \overline{) 75} \\
 \underline{60} \\
 15
 \end{array}$$

$$\begin{array}{r}
 3 \overline{) 15} \\
 \underline{15} \\
 0
 \end{array}$$

$$\begin{array}{r}
 5 \overline{) 25} \\
 \underline{25} \\
 0
 \end{array}$$

54 次の計算をなさい。

ふりかえろう!

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$$\begin{aligned}
 (1) \quad & (1 + \sqrt{5})(7 + \sqrt{5}) \\
 &= 1 \times 7 + 1 \times \sqrt{5} + \sqrt{5} \times 7 + \sqrt{5} \times \sqrt{5} \\
 &= 7 + \sqrt{5} + 7\sqrt{5} + 5 \\
 &= (7 + 5) + (1 + 7)\sqrt{5} \\
 &= \mathbf{12 + 8\sqrt{5}}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & (\sqrt{3} + \sqrt{7})^2 \\
 &= (\sqrt{3})^2 + 2 \times \sqrt{3} \times \sqrt{7} + (\sqrt{7})^2 \\
 &= 3 + 2\sqrt{3 \times 7} + 7 \\
 &= \mathbf{10 + 2\sqrt{21}}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & (\sqrt{7} - \sqrt{6})^2 \\
 &= (\sqrt{7})^2 - 2 \times \sqrt{7} \times \sqrt{6} + (\sqrt{6})^2 \\
 &= 7 - 2\sqrt{7 \times 6} + 6 \\
 &= \mathbf{13 - 2\sqrt{42}}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & (\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3}) \\
 &= (\sqrt{5})^2 - (\sqrt{3})^2 \\
 &= 5 - 3 \\
 &= \mathbf{2}
 \end{aligned}$$