

氏名 ( ) 点数 \_\_\_\_\_

$$\begin{aligned}
 (1) \quad & (\sqrt{5} - \sqrt{2})^2 - (\sqrt{3} - 3\sqrt{5})(\sqrt{3} + 2\sqrt{5}) \\
 & = (\sqrt{5})^2 - 2 \times \sqrt{5} \times \sqrt{2} + (\sqrt{2})^2 - \{(\sqrt{3})^2 + (-3\sqrt{5} + 2\sqrt{5})\sqrt{3} + (-3\sqrt{5}) \times 2\sqrt{5}\} \\
 & = 5 - 2\sqrt{10} + 2 - (3 - \sqrt{15} - 30) \\
 & = \underline{34 - 2\sqrt{10} + \sqrt{15}}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & (\sqrt{5} + 2\sqrt{3})(\sqrt{5} - 3\sqrt{3}) - (\sqrt{3} - \sqrt{2})^2 \\
 & = (\sqrt{5})^2 + (2\sqrt{3} - 3\sqrt{3})\sqrt{5} + 2\sqrt{3} \times (-3\sqrt{3}) - \{(\sqrt{3})^2 - 2 \times \sqrt{3} \times \sqrt{2} + (\sqrt{2})^2\} \\
 & = 5 - \sqrt{15} - 18 - (3 - 2\sqrt{6} + 2) \\
 & = -13 - \sqrt{15} - (5 - 2\sqrt{6}) \\
 & = \underline{-18 - \sqrt{15} + 2\sqrt{6}}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & (3\sqrt{2} + 5)(3\sqrt{2} - 5) - (\sqrt{5} - 3)^2 \\
 & = (3\sqrt{2})^2 - 5^2 - \{(\sqrt{5})^2 - 2 \times 3 \times \sqrt{5} + 3^2\} \\
 & = 18 - 25 - (5 - 6\sqrt{5} + 9) \\
 & = 18 - 25 - 5 + 6\sqrt{5} - 9 \\
 & = \underline{-21 + 6\sqrt{5}}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & (\sqrt{3} - \sqrt{2} + 3)^2 \rightarrow \sqrt{3} - \sqrt{2} = A \text{ とおく} \\
 & = (A + 3)^2 \\
 & = A^2 + 6A + 9 \\
 & = (\sqrt{3} - \sqrt{2})^2 + 6(\sqrt{3} - \sqrt{2}) + 9 \\
 & = (\sqrt{3})^2 - 2 \times \sqrt{3} \times \sqrt{2} + (\sqrt{2})^2 + 6\sqrt{3} - 6\sqrt{2} + 9 \\
 & = 3 - 2\sqrt{6} + 2 + 6\sqrt{3} - 6\sqrt{2} + 9 \\
 & = \underline{14 - 2\sqrt{6} + 6\sqrt{3} - 6\sqrt{2}}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & (\sqrt{5} - \sqrt{3} + 4)(\sqrt{5} - \sqrt{3} - 4) \rightarrow \sqrt{5} - \sqrt{3} = A \text{ とおく} \\
 & = (A + 4)(A - 4) \\
 & = A^2 - 16 \\
 & = (\sqrt{5} - \sqrt{3})^2 - 16 \\
 & = (\sqrt{5})^2 - 2 \times \sqrt{5} \times \sqrt{3} + (\sqrt{3})^2 - 16 \\
 & = 5 - 2\sqrt{15} + 3 - 16 \\
 & = \underline{-8 - 2\sqrt{15}}
 \end{aligned}$$