

いろいろな計算① 解答と解説

1 解答 (1) $2 + \sqrt{14}$ (2) $3\sqrt{2} - \sqrt{15}$ (3) $3 + \sqrt{6}$ (4) $\sqrt{2} + \sqrt{6}$

$$(1) \sqrt{2}(\sqrt{2} + \sqrt{7}) = \sqrt{2} \times \sqrt{2} + \sqrt{2} \times \sqrt{7} \\ = 2 + \sqrt{14}$$

$$(2) \sqrt{3}(\sqrt{6} - \sqrt{5}) = \sqrt{3} \times \sqrt{6} - \sqrt{3} \times \sqrt{5} \\ = \sqrt{18} - \sqrt{15} \\ = 3\sqrt{2} - \sqrt{15}$$

$$(3) (\sqrt{27} + \sqrt{18}) \div \sqrt{3} = \frac{\sqrt{27}}{\sqrt{3}} + \frac{\sqrt{18}}{\sqrt{3}} \\ = \sqrt{9} + \sqrt{6} \\ = 3 + \sqrt{6}$$

$$(4) (\sqrt{3} + 2)(\sqrt{6} - \sqrt{2}) = \sqrt{3} \times \sqrt{6} - \sqrt{3} \times \sqrt{2} + 2 \times \sqrt{6} - 2 \times \sqrt{2} \\ = \sqrt{18} - \sqrt{6} + 2\sqrt{6} - 2\sqrt{2} \\ = 3\sqrt{2} - \sqrt{6} + 2\sqrt{6} - 2\sqrt{2} \\ = \sqrt{2} + \sqrt{6}$$

2 解答 (1) $8 + 4\sqrt{3}$ (2) $38 - 12\sqrt{10}$ (3) 1 (4) -6

$$(1) (\sqrt{2} + \sqrt{6})^2 = (\sqrt{2})^2 + 2 \times \sqrt{6} \times \sqrt{2} + (\sqrt{6})^2 \\ = 2 + 2\sqrt{12} + 6 \\ = 8 + 2 \times 2\sqrt{3} \\ = 8 + 4\sqrt{3}$$

$$(2) (2\sqrt{5} - 3\sqrt{2})^2 = (2\sqrt{5})^2 - 2 \times 3\sqrt{2} \times 2\sqrt{5} + (3\sqrt{2})^2 \\ = 20 - 12\sqrt{10} + 18 \\ = 38 - 12\sqrt{10}$$

$$(3) (3 + 2\sqrt{2})(3 - 2\sqrt{2}) = 3^2 - (2\sqrt{2})^2 \\ = 9 - 8 \\ = 1$$

$$(4) (4\sqrt{3} + 3\sqrt{6})(4\sqrt{3} - 3\sqrt{6}) = (4\sqrt{3})^2 - (3\sqrt{6})^2 \\ = 48 - 54 \\ = -6$$