

中2数学C 2020年度春期 宿題解答

§2 平方根の簡約化と足し算・掛け算

H2.1

$$(1) \sqrt{8} = \sqrt{4 \times 2} = \boxed{2\sqrt{2}}$$

$$(2) \sqrt{28} = \sqrt{4 \times 7} = \boxed{2\sqrt{7}}$$

$$(3) \sqrt{98} = \sqrt{49 \times 2} = \boxed{7\sqrt{2}}$$

$$(4) \sqrt{108} = \sqrt{36 \times 3} = \boxed{6\sqrt{3}}$$

$$(5) 3\sqrt{18} = 3 \times \sqrt{9 \times 2} = 3 \times 3\sqrt{2} = \boxed{9\sqrt{2}}$$

$$(6) 4\sqrt{32} = 4 \times \sqrt{16 \times 2} = 4 \times 4\sqrt{2} = \boxed{16\sqrt{2}}$$

H2.2

$$(1) \sqrt{300} = \sqrt{100 \times 3} = 10\sqrt{3} = 10 \times 1.7320508\cdots = \boxed{17.320}5\cdots$$

$$(2) \sqrt{3000} = \sqrt{100 \times 30} = 10\sqrt{30} = 10 \times 5.4772255\cdots = \boxed{54.772}2\cdots$$

$$(3) \sqrt{\frac{3}{100}} = \frac{\sqrt{3}}{\sqrt{100}} = \frac{\sqrt{3}}{10} = \frac{1}{10} \times 1.7320508\cdots = \boxed{0.173}2\cdots$$

$$(4) \frac{300}{\sqrt{3}} = \frac{100\sqrt{9}}{\sqrt{3}} = 100\sqrt{\frac{9}{3}} = 100\sqrt{3} = 100 \times 1.7320508\cdots = \boxed{173.205}0\cdots$$

H2.3

$$(1) 2\sqrt{2} + 3\sqrt{2} = (2+3)\sqrt{2} = \boxed{5\sqrt{2}}$$

$$(2) 3\sqrt{2} - \frac{5}{2}\sqrt{2} + \frac{1}{2}\sqrt{2} = \left(3 - \frac{5}{2} + \frac{1}{2}\right)\sqrt{2} = \frac{6-5+1}{2}\sqrt{2} = \frac{2}{2}\sqrt{2} = \boxed{\sqrt{2}}$$

$$(3) \sqrt{8} + \sqrt{32} = 2\sqrt{2} + 4\sqrt{2} = (2+4)\sqrt{2} = \boxed{6\sqrt{2}}$$

$$(4) 4\sqrt{2} - \sqrt{18} = 4\sqrt{2} - 3\sqrt{2} = (4-3)\sqrt{2} = \boxed{\sqrt{2}}$$

H2.4

$$(1) \quad \sqrt{12} + \sqrt{20} + \sqrt{45} + \sqrt{48} = 2\sqrt{3} + 2\sqrt{5} + 3\sqrt{5} + 4\sqrt{3} \\ = \boxed{6\sqrt{3} + 5\sqrt{5}}$$

$$(2) \quad 2\sqrt{5} + 3\sqrt{80} - \sqrt{20} - 2\sqrt{180} = 2\sqrt{5} + 3 \times 4\sqrt{5} - 2\sqrt{5} - 2 \times 6\sqrt{5} \\ = \cancel{2\sqrt{5}} + \cancel{12\sqrt{5}} - \cancel{2\sqrt{5}} - \cancel{12\sqrt{5}} = \boxed{0}$$

$$(3) \quad \sqrt{150} + 3\sqrt{27} - \sqrt{363} - 2\sqrt{96} = 5\sqrt{6} + 3 \times 3\sqrt{3} - 11\sqrt{3} - 2 \times 4\sqrt{6} \\ = \boxed{-3\sqrt{6} - 2\sqrt{3}}$$

$$(4) \quad \sqrt{6} \times \sqrt{15} = \sqrt{\underline{3} \times 2} \times \sqrt{\underline{3} \times 5} = \boxed{3\sqrt{10}}$$

$$(5) \quad \sqrt{18} \times \sqrt{56} = 3\sqrt{\underline{2}} \times 2\sqrt{\underline{2} \times 7} = 6 \times 2\sqrt{7} = \boxed{12\sqrt{7}}$$

$$(6) \quad \sqrt{5}(\sqrt{32} - \sqrt{15}) - \sqrt{2}(\sqrt{20} - \sqrt{6}) = \sqrt{5}(4\sqrt{2} - \sqrt{15}) - \sqrt{2}(2\sqrt{5} - \sqrt{6}) \\ = 4\sqrt{10} - \sqrt{5 \times 5 \times 3} - 2\sqrt{10} + \sqrt{2 \times 2 \times 3} \\ = 4\sqrt{10} - 5\sqrt{3} - 2\sqrt{10} + 2\sqrt{3} \\ = \boxed{2\sqrt{10} - 3\sqrt{3}}$$