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|----|--|-------------|-----|-----|----|
| 得点 | | 演習問題 | 実施日 | 月 日 | 氏名 |
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【1】 次の計算をなさい。

① $3\sqrt{6} \times \sqrt{18}$

② $3\sqrt{56} \div \sqrt{63}$

③ $5\sqrt{2} + 3\sqrt{2} + \sqrt{8}$

④ $2\sqrt{72} - 3\sqrt{50} - \sqrt{242}$

⑤ $\frac{\sqrt{2}}{2} - \sqrt{2} + \frac{3\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + 2\sqrt{2}$

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

⑦ $(\sqrt{20} - \sqrt{10}) \div \sqrt{5}$

⑧ $6\sqrt{2} \div \sqrt{6} \times (-2\sqrt{3})$

⑨ $3\sqrt{24} \div 2\sqrt{54} + \sqrt{12} \times \sqrt{18}$

⑩ $\frac{18}{\sqrt{3}} - \frac{10\sqrt{3}}{\sqrt{6}} + \frac{4}{\sqrt{8}} - \sqrt{27} + \sqrt{32}$

【2】 次の計算をなさい。

① $\frac{\sqrt{12} - \sqrt{18}}{\sqrt{8}} - \frac{\sqrt{30} + \sqrt{60}}{\sqrt{20}}$

② $\frac{4\sqrt{3}}{\sqrt{2}} + \sqrt{72} - \frac{\sqrt{6} - 3\sqrt{2}}{\sqrt{3}}$

③ $\frac{\sqrt{10} + 2}{\sqrt{6}} \times \frac{\sqrt{10} - 2}{\sqrt{3}}$

④ $\frac{\sqrt{3} + 2}{\sqrt{12}} - \frac{\sqrt{32} - \sqrt{2}}{\sqrt{8}}$

【3】 次の計算をなさい。

① $(2\sqrt{2} - \sqrt{3})(2\sqrt{2} + \sqrt{3})$

② $(\sqrt{6} + 3)(2\sqrt{6} - 1)$

③ $(\sqrt{2} + \sqrt{3})^2$

④ $(\sqrt{5} + 1)^2 - (\sqrt{5} - 1)^2$

⑤ $(\sqrt{2} + \sqrt{8} - \sqrt{50})^2$

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

⑦ $(3\sqrt{5} + \sqrt{6})(\sqrt{45} - \sqrt{6}) - (\sqrt{5} + \sqrt{3})^2 - (\sqrt{5} - \sqrt{3})^2$

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|----|--|-----------------|-----|----------|---|----|
| 得点 | | 演習問題〔解答〕 | 実施日 | 月 | 日 | 氏名 |
| | | | | 平方根の計算 ⑦ | | |

【1】 次の計算をなさい。

① $3\sqrt{6} \times \sqrt{18} = 3\sqrt{108} = 3\sqrt{36} \times \sqrt{3} = \underline{18\sqrt{3}}$

② $3\sqrt{56} \div \sqrt{63} = \frac{3\sqrt{56}}{\sqrt{63}} = \frac{6\sqrt{14}}{3\sqrt{7}} = \underline{2\sqrt{2}}$

③ $5\sqrt{2} + 3\sqrt{2} + \sqrt{8} = 5\sqrt{2} + 3\sqrt{2} + 2\sqrt{2} = \underline{10\sqrt{2}}$

④ $2\sqrt{72} - 3\sqrt{50} - \sqrt{242} = 12\sqrt{2} - 15\sqrt{2} - 11\sqrt{2} = \underline{-14\sqrt{2}}$

⑤ $\frac{\sqrt{2}}{2} - \sqrt{2} + \frac{3\sqrt{2}}{2} - \frac{\sqrt{2}}{2} + 2\sqrt{2} = \underline{\frac{5\sqrt{2}}{2}}$

⑥ $4(\sqrt{3} - \sqrt{2}) - 2(\sqrt{3} - 2\sqrt{2}) = \underline{2\sqrt{3}}$

⑦ $(\sqrt{20} - \sqrt{10}) \div \sqrt{5} = \sqrt{4} - \sqrt{2} = \underline{2 - \sqrt{2}}$

⑧ $6\sqrt{2} \div \sqrt{6} \times (-2\sqrt{3}) = -\frac{6\sqrt{2} \times 2\sqrt{3}}{\sqrt{6}} = \underline{-12}$

⑨ $3\sqrt{24} \div 2\sqrt{54} + \sqrt{12} \times \sqrt{18} = \frac{6\sqrt{6}}{6\sqrt{6}} + 6\sqrt{6} = \underline{1 + 6\sqrt{6}}$

⑩ $\frac{18}{\sqrt{3}} - \frac{10\sqrt{3}}{\sqrt{6}} + \frac{4}{\sqrt{8}} - \sqrt{27} + \sqrt{32}$
 $= \frac{18\sqrt{3}}{3} - \frac{10\sqrt{18}}{6} + \frac{4\sqrt{8}}{8} - 3\sqrt{3} + 4\sqrt{2}$
 $= 6\sqrt{3} - 5\sqrt{2} + \sqrt{2} - 3\sqrt{3} + 4\sqrt{2} = \underline{3\sqrt{3}}$

【2】 次の計算をなさい。

① $\frac{\sqrt{12} - \sqrt{18}}{\sqrt{8}} - \frac{\sqrt{30} + \sqrt{60}}{\sqrt{20}} = \frac{2\sqrt{3} - 3\sqrt{2}}{2\sqrt{2}} - \frac{\sqrt{30} + 2\sqrt{15}}{2\sqrt{5}}$
 $= \frac{2\sqrt{6} - 6}{4} - \frac{5\sqrt{6} + 10\sqrt{3}}{10} = \underline{-\frac{3 + 2\sqrt{3}}{2}}$

② $\frac{4\sqrt{3}}{\sqrt{2}} + \sqrt{72} - \frac{\sqrt{6} - 3\sqrt{2}}{\sqrt{3}} = \frac{4\sqrt{6}}{2} + 6\sqrt{2} - \frac{\sqrt{18} - 3\sqrt{6}}{3}$
 $= 2\sqrt{6} + 6\sqrt{2} - \sqrt{2} + \sqrt{6} = \underline{3\sqrt{6} + 5\sqrt{2}}$

③ $\frac{\sqrt{10} + 2}{\sqrt{6}} \times \frac{\sqrt{10} - 2}{\sqrt{3}} = \frac{10 - 4}{3\sqrt{2}} = \frac{6}{3\sqrt{2}} = \frac{2}{\sqrt{2}} = \underline{\sqrt{2}}$

④ $\frac{\sqrt{3} + 2}{\sqrt{12}} - \frac{\sqrt{32} - \sqrt{2}}{\sqrt{8}} = \frac{\sqrt{3} + 2}{2\sqrt{3}} - \frac{4\sqrt{2} - \sqrt{2}}{2\sqrt{2}}$
 $= \frac{3 + 2\sqrt{3}}{6} - \frac{3\sqrt{2}}{2\sqrt{2}} = \frac{3 + 2\sqrt{3} - 9}{6} = \underline{\frac{\sqrt{3} - 3}{3}}$

【3】 次の計算をなさい。

① $(2\sqrt{2} - \sqrt{3})(2\sqrt{2} + \sqrt{3}) = (2\sqrt{2})^2 - (\sqrt{3})^2 = \underline{5}$

② $(\sqrt{6} + 3)(2\sqrt{6} - 1) = 12 + 5\sqrt{6} - 3 = \underline{9 + 5\sqrt{6}}$

③ $(\sqrt{2} + \sqrt{3})^2 = 2 + 2\sqrt{6} + 3 = \underline{5 + 2\sqrt{6}}$

④ $(\sqrt{5} + 1)^2 - (\sqrt{5} - 1)^2 = (6 + 2\sqrt{5}) - (6 - 2\sqrt{5}) = \underline{4\sqrt{5}}$

⑤ $(\sqrt{2} + \sqrt{8} - \sqrt{50})^2 = (\sqrt{2} + 2\sqrt{2} - 5\sqrt{2})^2 = (-2\sqrt{2})^2 = \underline{8}$

⑥ $(\sqrt{3} - \sqrt{2})(\sqrt{3} + \sqrt{2}) - (\sqrt{2} - \sqrt{5})^2$
 $= (3 - 2) - (2 - 2\sqrt{10} + 5) = \underline{-6 + 2\sqrt{10}}$

⑦ $(3\sqrt{5} + \sqrt{6})(\sqrt{45} - \sqrt{6}) - (\sqrt{5} + \sqrt{3})^2 - (\sqrt{5} - \sqrt{3})^2$
 $= (3\sqrt{5} + \sqrt{6})(3\sqrt{5} - \sqrt{6}) - (\sqrt{5} + \sqrt{3})^2 - (\sqrt{5} - \sqrt{3})^2$
 $= (45 - 6) - (5 + 2\sqrt{15} + 3) - (5 - 2\sqrt{15} + 3) = \underline{23}$