

得点		演習問題	実施日	月 日	氏名	

【1】 次の計算をなさい。

① $\sqrt{2}(\sqrt{3}+1)$

② $\sqrt{5}(\sqrt{7}-3)$

③ $\sqrt{2}(\sqrt{6}+1)$

④ $\sqrt{3}(5+2\sqrt{6})$

⑤ $\sqrt{5}(\sqrt{10}-\sqrt{5})$

⑥ $\sqrt{3}(\sqrt{12}+\sqrt{6})$

⑦ $3\sqrt{2}(\sqrt{12}-\sqrt{8})$

【2】 次の計算をなさい。

① $(\sqrt{7}+2)(\sqrt{7}-2)$

② $(\sqrt{5}+\sqrt{2})(\sqrt{5}-\sqrt{2})$

③ $(3\sqrt{3}-2)(3\sqrt{3}+2)$

④ $(2\sqrt{7}+\sqrt{3})(2\sqrt{7}-\sqrt{3})$

⑤ $(\sqrt{7}-7)(\sqrt{7}+1)$

⑥ $(2\sqrt{5}+3)(\sqrt{5}-1)$

【3】 次の計算をなさい。

① $(\sqrt{3}+1)^2$

② $(\sqrt{5}-\sqrt{2})^2$

③ $(\sqrt{2}-\sqrt{7})^2$

④ $(2\sqrt{3}-\sqrt{6})^2$

⑤ $(\sqrt{5}-\frac{1}{\sqrt{5}})^2$

【4】 次の計算をなさい。

① $\sqrt{2}(\sqrt{10}-\sqrt{6})-\sqrt{5}(\sqrt{15}-2)$

② $\sqrt{6}(\sqrt{6}+\sqrt{2})-\sqrt{3}(2\sqrt{3}-1)$

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

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

⑤ $(\sqrt{7}-1)^2-(\sqrt{7}+1)^2$

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

得点		演習問題〔解答〕	実施日	月	日	氏名
				平方根の計算 ⑥		

【1】 次の計算を下さい。

① $\sqrt{2}(\sqrt{3}+1) = \underline{\sqrt{6} + \sqrt{2}}$

② $\sqrt{5}(\sqrt{7}-3) = \underline{\sqrt{35} - 3\sqrt{5}}$

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

④ $\sqrt{3}(5+2\sqrt{6}) = 5\sqrt{3} + 2\sqrt{18} = \underline{5\sqrt{3} + 6\sqrt{2}}$

⑤ $\sqrt{5}(\sqrt{10}-\sqrt{5}) = \sqrt{50} - 5 = \underline{5\sqrt{2} - 5}$

⑥ $\sqrt{3}(\sqrt{12} + \sqrt{6}) = \sqrt{36} + \sqrt{18} = \underline{6 + 3\sqrt{2}}$

⑦ $3\sqrt{2}(\sqrt{12} - \sqrt{8}) = 3\sqrt{24} - 3\sqrt{16} = \underline{6\sqrt{6} - 12}$

【2】 次の計算を下さい。

① $(\sqrt{7}+2)(\sqrt{7}-2) = (\sqrt{7})^2 - 2^2 = 7 - 4 = \underline{3}$

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

③ $(3\sqrt{3}-2)(3\sqrt{3}+2) = (3\sqrt{3})^2 - 2^2 = 27 - 4 = \underline{23}$

④ $(2\sqrt{7} + \sqrt{3})(2\sqrt{7} - \sqrt{3}) = (2\sqrt{7})^2 - (\sqrt{3})^2 = 28 - 3 = \underline{25}$

⑤ $(\sqrt{7}-7)(\sqrt{7}+1) = (\sqrt{7})^2 + \sqrt{7} - 7\sqrt{7} - 7 = \underline{-6\sqrt{7}}$

⑥ $(2\sqrt{5}+3)(\sqrt{5}-1) = 2\sqrt{5} \times \sqrt{5} - 2\sqrt{5} + 3\sqrt{5} - 3 = \underline{7 + \sqrt{5}}$

【3】 次の計算を下さい。

① $(\sqrt{3}+1)^2 = (\sqrt{3})^2 + 2 \times \sqrt{3} \times 1 + 1^2 = 3 + 2\sqrt{3} + 1 = \underline{4 + 2\sqrt{3}}$

② $(\sqrt{5}-\sqrt{2})^2 = (\sqrt{5})^2 - 2 \times \sqrt{5} \times \sqrt{2} + (\sqrt{2})^2 = 5 - 2\sqrt{10} + 2 = \underline{7 - 2\sqrt{10}}$

③ $(\sqrt{2}-\sqrt{7})^2 = (\sqrt{2})^2 - 2 \times \sqrt{2} \times \sqrt{7} + (\sqrt{7})^2 = 2 - 2\sqrt{14} + 7 = \underline{9 - 2\sqrt{14}}$

④ $(2\sqrt{3}-\sqrt{6})^2 = (2\sqrt{3})^2 - 2 \times 2\sqrt{3} \times \sqrt{6} + (\sqrt{6})^2 = 12 - 4\sqrt{18} + 6 = \underline{18 - 12\sqrt{2}}$

⑤ $(\sqrt{5} - \frac{1}{\sqrt{5}})^2 = (\sqrt{5})^2 - 2 \times \sqrt{5} \times \frac{1}{\sqrt{5}} + \left(\frac{1}{\sqrt{5}}\right)^2 = 5 - 2 + \frac{1}{5} = \underline{\frac{16}{5}}$

【4】 次の計算を下さい。

① $\sqrt{2}(\sqrt{10}-\sqrt{6}) - \sqrt{5}(\sqrt{15}-2) = \sqrt{20} - \sqrt{12} - \sqrt{75} + 2\sqrt{5} = 2\sqrt{5} - 2\sqrt{3} - 5\sqrt{3} + 2\sqrt{5} = \underline{4\sqrt{5} - 7\sqrt{3}}$

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

③ $(\sqrt{6}+2)(\sqrt{6}-2) + (\sqrt{6}+5)^2 = (\sqrt{6})^2 - 2^2 + (\sqrt{6})^2 + 2 \times \sqrt{6} \times 5 + 5^2 = 6 - 4 + 6 + 10\sqrt{6} + 25 = \underline{33 + 10\sqrt{6}}$

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

⑤ $(\sqrt{7}-1)^2 - (\sqrt{7}+1)^2 = (\sqrt{7})^2 - 2\sqrt{7} + 1^2 - \{(\sqrt{7})^2 + 2\sqrt{7} + 1^2\} = 7 - 2\sqrt{7} + 1 - 7 - 2\sqrt{7} - 1 = \underline{-4\sqrt{7}}$

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