

〔学習プリント２１〕

練習40 次の式の分母を有理化せよ。

$$(1) \frac{2}{\sqrt{3}} = \frac{2 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{2\sqrt{3}}{3}$$

$$(2) \frac{4}{\sqrt{2}} = \frac{4 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$$

$$(3) \frac{\sqrt{3}}{\sqrt{2}} = \frac{\sqrt{3} \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{\sqrt{6}}{2}$$

$$(4) \frac{1}{2\sqrt{5}} = \frac{1 \times \sqrt{5}}{2\sqrt{5} \times \sqrt{5}} = \frac{\sqrt{5}}{10}$$

練習41 次の式の分母を有理化せよ。

$$\begin{aligned} (1) \frac{1}{\sqrt{3} + \sqrt{2}} &= \frac{\sqrt{3} - \sqrt{2}}{(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})} \\ &= \frac{\sqrt{3} - \sqrt{2}}{(\sqrt{3})^2 - (\sqrt{2})^2} \\ &= \frac{\sqrt{3} - \sqrt{2}}{3 - 2} \\ &= \sqrt{3} - \sqrt{2} \end{aligned}$$

$$\begin{aligned} (2) \frac{\sqrt{2}}{\sqrt{5} - \sqrt{3}} &= \frac{\sqrt{2}(\sqrt{5} + \sqrt{3})}{(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})} \\ &= \frac{\sqrt{10} + \sqrt{6}}{(\sqrt{5})^2 - (\sqrt{3})^2} \\ &= \frac{\sqrt{10} + \sqrt{6}}{5 - 3} \\ &= \frac{\sqrt{10} + \sqrt{6}}{2} \end{aligned}$$

$$\begin{aligned} (3) \frac{2\sqrt{3}}{\sqrt{5} + 1} &= \frac{2\sqrt{3}(\sqrt{5} - 1)}{(\sqrt{5} + 1)(\sqrt{5} - 1)} \\ &= \frac{2\sqrt{15} - 2\sqrt{3}}{(\sqrt{5})^2 - 1^2} \\ &= \frac{2\sqrt{15} - 2\sqrt{3}}{5 - 1} \\ &= \frac{2\sqrt{15} - 2\sqrt{3}}{4} \\ &= \frac{2(\sqrt{15} - \sqrt{3})}{4} \\ &= \frac{\sqrt{15} - \sqrt{3}}{2} \end{aligned}$$

$$\begin{aligned} (4) \frac{\sqrt{5} + \sqrt{2}}{\sqrt{5} - \sqrt{2}} &= \frac{(\sqrt{5} + \sqrt{2})^2}{(\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2})} \\ &= \frac{(\sqrt{5})^2 + 2\sqrt{5}\sqrt{2} + (\sqrt{2})^2}{(\sqrt{5})^2 - (\sqrt{2})^2} \\ &= \frac{5 + 2\sqrt{10} + 2}{5 - 2} \\ &= \frac{7 + 2\sqrt{10}}{3} \end{aligned}$$

演習 次の数の分母を有理化せよ。

$$(1) \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{\sqrt{5}}{5}$$

$$(2) \frac{\sqrt{5}}{3\sqrt{2}} = \frac{\sqrt{5} \times \sqrt{2}}{3\sqrt{2} \times \sqrt{2}} = \frac{\sqrt{10}}{3 \times 2} = \frac{\sqrt{10}}{6}$$

$$\begin{aligned} (3) \frac{\sqrt{3}}{2 - \sqrt{3}} &= \frac{\sqrt{3}(2 + \sqrt{3})}{(2 - \sqrt{3})(2 + \sqrt{3})} \\ &= \frac{2\sqrt{3} + 3}{2^2 - (\sqrt{3})^2} \\ &= \frac{2\sqrt{3} + 3}{4 - 3} \\ &= 2\sqrt{3} + 3 \end{aligned}$$

$$\begin{aligned} (4) \frac{\sqrt{3} + \sqrt{5}}{\sqrt{3} - \sqrt{5}} &= \frac{(\sqrt{3} + \sqrt{5})^2}{(\sqrt{3} - \sqrt{5})(\sqrt{3} + \sqrt{5})} \\ &= \frac{(\sqrt{3})^2 + 2 \times \sqrt{3} \times \sqrt{5} + (\sqrt{5})^2}{(\sqrt{3})^2 - (\sqrt{5})^2} \\ &= \frac{3 + 2\sqrt{15} + 5}{3 - 5} \\ &= \frac{8 + 2\sqrt{15}}{-2} \\ &= -4 - \sqrt{15} \end{aligned}$$

〔学習プリント２２〕

〔演習１〕 次の１次方程式を解け。

$$\begin{array}{ll} (1) & x+2=8 \\ & x=8-2 \\ & \underline{x=6} \end{array} \qquad \begin{array}{ll} (2) & x-5=4 \\ & x=4+5 \\ & \underline{x=9} \end{array}$$

$$\begin{array}{ll} (3) & 7x=21 \\ & \frac{7x}{7}=\frac{21}{7} \\ & \underline{x=3} \end{array} \qquad \begin{array}{ll} (4) & -3x=18 \\ & \frac{-3x}{-3}=\frac{18}{-3} \\ & \underline{x=-6} \end{array}$$

$$\begin{array}{ll} (5) & 4x=11 \\ & \frac{4x}{4}=\frac{11}{4} \\ & \underline{x=\frac{11}{4}} \end{array}$$

〔演習２〕 次の１次方程式を解け。

$$\begin{array}{ll} (1) & 5x-1=9 \\ & 5x=9+1 \\ & 5x=10 \\ & \frac{5x}{5}=\frac{10}{5} \\ & \underline{x=2} \end{array} \qquad \begin{array}{ll} (2) & 7x+9=0 \\ & 7x=-9 \\ & \frac{7x}{7}=\frac{-9}{7} \\ & \underline{x=-\frac{9}{7}} \end{array}$$

$$\begin{array}{ll} (3) & 4x=18-2x \\ 4x+2x=18 \\ & 6x=18 \\ & \frac{6x}{6}=\frac{18}{6} \\ & \underline{x=3} \end{array} \qquad \begin{array}{ll} (4) & 5x+6=3x+2 \\ 5x-3x=2-6 \\ & 2x=-4 \\ & \frac{2x}{2}=\frac{-4}{2} \\ & \underline{x=-2} \end{array}$$

$$\begin{array}{ll} (5) & 2x-3=6x+15 \\ 2x-6x=15+3 \\ & -4x=18 \\ & \frac{-4x}{-4}=\frac{18}{-4} \\ & \underline{x=-\frac{9}{2}} \end{array}$$

〔演習３〕 次の１次方程式を解け。

$$\begin{array}{ll} (1) & 5x=2x-9 \\ 5x-2x=-9 \\ & 3x=-9 \\ & \frac{3x}{3}=\frac{-9}{3} \\ & \underline{x=-3} \end{array} \qquad \begin{array}{ll} (2) & 4x+7=8x-1 \\ 4x-8x=-1-7 \\ & -4x=-8 \\ & \frac{-4x}{-4}=\frac{-8}{-4} \\ & \underline{x=2} \end{array}$$