

(3) 分母の有理化…分数の分母を根号のない形に直すこと。

⊕→「分母の√の部分を分母・分子にかける」

|                                                                                                                          |                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| $\textcircled{1} \sqrt{\frac{a}{b}} = \frac{\sqrt{a} \times \sqrt{b}}{\sqrt{b} \times \sqrt{b}}$ $= \frac{\sqrt{ab}}{b}$ | $\textcircled{2} \frac{a}{\sqrt{b}} = \frac{a \times \sqrt{b}}{\sqrt{b} \times \sqrt{b}}$ $= \frac{a\sqrt{b}}{b}$ |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|

(例1) 次の分数の分母を有理化しなさい。

$$\textcircled{1} \sqrt{\frac{5}{2}} \quad \begin{array}{l} \times \sqrt{2} \\ \hline \sqrt{10} \\ 2 \end{array}$$

$$\textcircled{2} \frac{9}{\sqrt{12}} \quad \begin{array}{l} \times \sqrt{3} \\ \hline \frac{9 \times \sqrt{3}}{2\sqrt{3} \times \sqrt{3}} \\ \hline \frac{3\sqrt{3}}{2 \times 3} \\ \hline \frac{3\sqrt{3}}{2} \end{array}$$

$$\textcircled{3} \frac{4\sqrt{3}}{\sqrt{8}} \quad \begin{array}{l} \times \sqrt{2} \\ \hline \frac{2 \times 4\sqrt{3}}{2\sqrt{2} \times \sqrt{2}} \\ \hline \frac{2\sqrt{6}}{2} \\ \hline \sqrt{6} \end{array}$$

(4) 平方根の乗除Ⅱ

|                                                            |                                                                                              |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| $\textcircled{1} a\sqrt{b} \times c\sqrt{d} = ac\sqrt{bd}$ | $\textcircled{2} \frac{\sqrt{a}}{b} \times \frac{b\sqrt{b}}{a\sqrt{a}} = \frac{\sqrt{b}}{a}$ |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------|

(例2) 次の計算をしなさい。

$$\textcircled{1} \sqrt{18} \times 3\sqrt{24} = 3\sqrt{2} \times 6\sqrt{6}$$

$$= 18\sqrt{12}$$

$$= 36\sqrt{3}$$

$$\textcircled{2} \frac{\sqrt{12}}{3} \div \frac{\sqrt{3}}{6} = \frac{2\sqrt{3}}{3} \times \frac{6}{\sqrt{3}}$$

$$= 4$$

$$\textcircled{3} \sqrt{12} \div 6\sqrt{15} \times \sqrt{5}$$

$$= \frac{2\sqrt{3} \times \sqrt{5}}{3 \times 6\sqrt{15}}$$

$$= \frac{1}{3}$$

← √の約分は  
必ず√がく!

☆ √の中は中どうし、√の外は外どうしで

乗除、約分をする!

最後に分母の有理化と  $a\sqrt{b}$  チェック!!

(5) 平方根の近似値<sup>きんじち</sup>

$$\textcircled{1} \sqrt{100} = 10 \quad \textcircled{2} \sqrt{10000} = 100 \quad \textcircled{3} \sqrt{\frac{1}{100}} = \frac{1}{10} \quad \textcircled{4} \sqrt{\frac{1}{10000}} = \frac{1}{100}$$

(例3)  $\sqrt{5} = 2.236$ ,  $\sqrt{50} = 7.071$  として次の近似値を求めよ。

$$\begin{array}{lllll} \textcircled{1} \sqrt{500} & \textcircled{2} \sqrt{500000} & \textcircled{3} \sqrt{0.50} & \textcircled{4} \sqrt{0.000050} & \textcircled{5} \sqrt{200} \\ = \sqrt{5} \times \sqrt{100} & = \sqrt{50} \times \sqrt{10000} & = \sqrt{\frac{50}{100}} & = \sqrt{\frac{50}{1000000}} & = \sqrt{4} \times \sqrt{50} \\ = 2.236 \times 10 & = 7.071 \times 100 & = \frac{\sqrt{50}}{\sqrt{100}} & = \frac{\sqrt{50}}{\sqrt{1000000}} & = 2 \times 7.071 \\ = 22.36 & = 707.1 & = 7.071 \times \frac{1}{10} & = 7.071 \times \frac{1}{1000} & = 14.142 \\ & & = 0.7071 & = 0.007071 & \end{array}$$

$\left( \begin{array}{l} 200 \div 5 = 40 \times \\ 200 \div 50 = 4 \text{ ok} \end{array} \right)$   
 $\uparrow$   
 2乗の数に  
 合わせる

(6) 平方根の加法・減法

(例4) 加法・減法… $\sqrt{\quad}$ の中が同じものどうしは同類項としてまとめる！

$$\begin{array}{ll} \textcircled{1} \sqrt{50} - \sqrt{12} - \sqrt{8} + \sqrt{27} & \textcircled{2} \sqrt{8} - \frac{3}{\sqrt{2}} \\ = \underline{5\sqrt{2}} - \underline{2\sqrt{3}} - \underline{2\sqrt{2}} + \underline{3\sqrt{3}} & = 2\sqrt{2} - \frac{3\sqrt{2}}{2} \\ = 3\sqrt{2} + \sqrt{3} & \left[ \begin{array}{l} \text{通分} \\ \frac{4\sqrt{2}}{2} - \frac{3\sqrt{2}}{2} \\ = \frac{\sqrt{2}}{2} \end{array} \right] \end{array}$$