

# Rationalize Denominator

$$\textcircled{2} \quad \frac{2}{\sqrt{3}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{9}} = \frac{2\sqrt{3}}{3}$$

$$\textcircled{3} \quad \frac{1}{\sqrt{7}} = \frac{1}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{\sqrt{49}} = \frac{\sqrt{7}}{7}$$

$$\textcircled{4} \quad \frac{6}{\sqrt{2}} = \frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{\sqrt{4}} = \frac{6\sqrt{2}}{2} = \frac{6}{2}\sqrt{2} = 3\sqrt{2}$$

$$\textcircled{5} \quad \frac{15}{\sqrt{5}} = \frac{15}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{15\sqrt{5}}{\sqrt{25}} = \frac{15\sqrt{5}}{5} = \frac{15}{5}\sqrt{5} = 3\sqrt{5}$$

$$\textcircled{6} \quad \frac{42}{\sqrt{7}} = \frac{42}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{42\sqrt{7}}{\sqrt{49}} = \frac{42\sqrt{7}}{7} = \frac{42}{7}\sqrt{7} = 6\sqrt{7}$$

$$\textcircled{7} \quad \frac{1}{\sqrt{81}} = \frac{1}{9}$$

$$\textcircled{8} \quad \frac{2}{\sqrt{11}} = \frac{2}{\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{2\sqrt{11}}{\sqrt{121}} = \frac{2\sqrt{11}}{11}$$

$$\textcircled{9} \quad \frac{4}{\sqrt{2}} = \frac{4}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{\sqrt{4}} = \frac{4\sqrt{2}}{2} = \frac{4}{2}\sqrt{2} = 2\sqrt{2}$$

$$\textcircled{10} \quad \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \frac{\sqrt{3}}{3}$$

$$\textcircled{11} \quad \frac{1}{\sqrt{225}} = \frac{1}{15}$$

$$\textcircled{12} \quad \frac{1}{3\sqrt{6}} = \frac{1}{3 \cdot 4} = \frac{1}{12}$$

$$\textcircled{13} \quad \frac{8}{3\sqrt{2}} = \frac{8}{3\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{3\sqrt{4}} = \frac{8\sqrt{2}}{3 \cdot 2} = \frac{8\sqrt{2}}{6}$$
$$= \frac{8}{6} \sqrt{2} = \frac{4}{3} \sqrt{2} = \frac{4\sqrt{2}}{3}$$

$$\textcircled{14} \quad \frac{2}{\sqrt{3}} = \frac{2}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{9}} = \frac{2\sqrt{3}}{3}$$

$$\textcircled{15} \quad \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{4}} = \frac{\sqrt{2}}{2}$$

$$\textcircled{16} \quad \frac{1}{\sqrt{12}} = \frac{1}{\sqrt{12}} \frac{\sqrt{12}}{\sqrt{12}} = \frac{\sqrt{12}}{12} = \frac{\sqrt{4}\sqrt{3}}{12} = \frac{2\sqrt{3}}{12} = \frac{\sqrt{3}}{6}$$

method 2

$$\frac{1}{\sqrt{12}} = \frac{1}{\sqrt{4}\sqrt{3}} = \frac{1}{2\sqrt{3}} = \frac{1}{2\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{2 \cdot 3} = \frac{\sqrt{3}}{6}$$

$$\textcircled{17} \quad \frac{11}{\sqrt{121}} = \frac{11}{11} = 1$$

$$\textcircled{18} \quad \frac{12}{\sqrt{36}} = \frac{12}{6} = 2$$

$$\textcircled{19} \quad \frac{2}{\sqrt{300}} = \frac{2}{\sqrt{100}\sqrt{3}} = \frac{2}{10\sqrt{3}} = \frac{2}{10\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{10\sqrt{9}}$$
$$= \frac{2\sqrt{3}}{10 \cdot 3} = \frac{2\sqrt{3}}{30} = \frac{2}{30} \sqrt{3} = \frac{1}{15} \sqrt{3} = \frac{\sqrt{3}}{15}$$

$$\begin{aligned}
 \textcircled{19} \quad \frac{2}{\sqrt{300}} &= \frac{2}{\sqrt{300}} \frac{\sqrt{300}}{\sqrt{300}} = \frac{2\sqrt{300}}{300} = \frac{2\sqrt{100\sqrt{3}}}{300} \\
 &= \frac{2 \cdot 10\sqrt{3}}{300} = \frac{20\sqrt{3}}{300} = \frac{20}{300}\sqrt{3} \\
 &= \frac{1}{15}\sqrt{3} = \frac{\sqrt{3}}{15}
 \end{aligned}$$

$$\textcircled{20} \quad \frac{1}{3\sqrt{2}} = \frac{1}{3\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{3 \cdot \sqrt{4}} = \frac{\sqrt{2}}{3 \cdot 2} = \frac{\sqrt{2}}{6}$$

$$\textcircled{21} \quad \frac{7}{\sqrt{3}} = \frac{7\sqrt{3}}{\sqrt{3}\sqrt{3}} = \frac{7\sqrt{3}}{\sqrt{9}} = \frac{7\sqrt{3}}{3}$$

$$\begin{aligned}
 \textcircled{22} \quad \frac{18}{\sqrt{27}} &= \frac{18}{\sqrt{9}\sqrt{3}} = \frac{18}{3\sqrt{3}} = \frac{18}{3} \frac{1}{\sqrt{3}} \\
 &= \frac{18}{3} \frac{1}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{3 \cdot 3} = \frac{18\sqrt{3}}{9} = \frac{18}{9}\sqrt{3} \\
 &= 2\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 \frac{18}{\sqrt{27}} &= \frac{18}{\sqrt{27}} \frac{\sqrt{27}}{\sqrt{27}} = \frac{18\sqrt{27}}{27} = \frac{18}{27} \sqrt{9\sqrt{3}} \\
 &= \frac{18 \cdot 3\sqrt{3}}{27} = \frac{54\sqrt{3}}{27} = 2\sqrt{3}
 \end{aligned}$$

$$\begin{aligned} \textcircled{23} \quad \frac{6}{2\sqrt{7}} &= \frac{6}{2} \frac{1}{\sqrt{7}} = \frac{3}{1} \frac{1}{\sqrt{7}} = \frac{3}{\sqrt{7}} = \frac{3}{\sqrt{7}} \frac{\sqrt{7}}{\sqrt{7}} \\ &= \frac{3\sqrt{7}}{\sqrt{49}} = \textcircled{\frac{3\sqrt{7}}{7}} \end{aligned}$$

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$$\begin{aligned} \frac{6}{2\sqrt{7}} &= \frac{6}{2\sqrt{7}} \frac{\sqrt{7}}{\sqrt{7}} = \frac{6\sqrt{7}}{2\sqrt{49}} = \frac{6\sqrt{7}}{2 \cdot 7} = \frac{6\sqrt{7}}{14} \\ &= \frac{6}{14} \sqrt{7} = \textcircled{\frac{3\sqrt{7}}{7}} \end{aligned}$$

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$$\textcircled{24} \quad \frac{8}{3\sqrt{2}} = \frac{8 \cdot \sqrt{2}}{3\sqrt{2} \sqrt{2}} = \frac{8\sqrt{2}}{3 \cdot 2} = \frac{8\sqrt{2}}{12} = \textcircled{\frac{2\sqrt{2}}{3}}$$

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