



Rationalisation Ex 3.2 Q1

Answer :

(i) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator of the given expression $\frac{3}{\sqrt{5}}$ by $\sqrt{5}$, to get

$$\begin{aligned}\frac{3}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} &= \frac{3\sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{3\sqrt{5}}{5}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{3\sqrt{5}}{5}}$.

(ii) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator of the given expression $\frac{3}{2\sqrt{5}}$ by $\sqrt{5}$, to get

$$\begin{aligned}\frac{3}{2\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} &= \frac{3\sqrt{5}}{2\sqrt{5} \times \sqrt{5}} \\ &= \frac{3\sqrt{5}}{2 \times 5} \\ &= \frac{3\sqrt{5}}{10}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{3\sqrt{5}}{10}}$.

(iii) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator of the given expression $\frac{1}{\sqrt{12}}$ by $\sqrt{12}$, to get

$$\begin{aligned}\frac{1}{\sqrt{12}} \times \frac{\sqrt{12}}{\sqrt{12}} &= \frac{\sqrt{12}}{\sqrt{12} \times \sqrt{12}} \\ &= \frac{\sqrt{12}}{12} \\ &= \frac{\sqrt{4 \times 3}}{12} \\ &= \frac{2 \times \sqrt{3}}{12} \\ &= \frac{\sqrt{3}}{6}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{\sqrt{3}}{6}}$.

(iv) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator of the given expression $\frac{\sqrt{2}}{\sqrt{5}}$ by $\sqrt{5}$, to get

$$\begin{aligned}\frac{\sqrt{2}}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} &= \frac{\sqrt{2} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{\sqrt{10}}{5}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{\sqrt{10}}{5}}$.

(v) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator of

the given expression $\frac{\sqrt{3}+1}{\sqrt{2}}$ by $\sqrt{2}$, to get

$$\begin{aligned}\frac{\sqrt{3}+1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} &= \frac{\sqrt{2} \times \sqrt{3} + \sqrt{2}}{\sqrt{2} \times \sqrt{2}} \\ &= \frac{\sqrt{6} + \sqrt{2}}{2}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{\sqrt{6} + \sqrt{2}}{2}}$.

(vi) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator

of the given expression $\frac{\sqrt{2} + \sqrt{5}}{\sqrt{3}}$ by $\sqrt{3}$, to get

$$\begin{aligned}\frac{\sqrt{2} + \sqrt{5}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} &= \frac{\sqrt{2} \times \sqrt{3} + \sqrt{5} \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} \\ &= \frac{\sqrt{6} + \sqrt{15}}{3}\end{aligned}$$

(vii) We know that rationalization factor for $\frac{1}{\sqrt{a}}$ is \sqrt{a} . We will multiply numerator and denominator

of the given expression $\frac{3\sqrt{2}}{\sqrt{5}}$ by $\sqrt{5}$, to get

$$\begin{aligned}\frac{3\sqrt{2}}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} &= \frac{3\sqrt{2} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{3\sqrt{10}}{5}\end{aligned}$$

Hence the given expression is simplified to $\boxed{\frac{3\sqrt{10}}{5}}$.

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