Questions: Rationalizing the denominator

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Summary

A selection of questions for the study guide on rationalizing the denominator.

Before attempting these questions, it is highly recommended that you read Guide: Rationalizing the denominator.

Q1

Rationalize the denominator for each of the following expressions. Provide your answers in their simplest form and with a positive denominator.

1.1. $\dfrac{5}{\sqrt{3}}$

1.2. $\dfrac{7}{2\sqrt{5}}$

1.3. $\dfrac{11}{4\sqrt{7}}$

1.4. $\dfrac{8}{5\sqrt{6}}$

1.5. $\dfrac{3\sqrt{2}}{\sqrt{5}}$

1.6. $\dfrac{9}{\sqrt{10}}$

1.7. $\dfrac{\sqrt{7}}{\sqrt{3}}$

1.8. $\dfrac{\sqrt{2}}{\sqrt{6}}$

1.9. $\dfrac{12}{\sqrt{11}}$

1.10. $\dfrac{\sqrt{8}}{\sqrt{2}}$

1.11. $\dfrac{15}{3\sqrt{7}}$

1.12. $\dfrac{6\sqrt{3}}{\sqrt{10}}$

1.13. $\dfrac{\sqrt{18}}{\sqrt{9}}$

1.14. $\dfrac{2\sqrt{5}}{\sqrt{12}}$

1.15. $\dfrac{4}{\sqrt{2}}$

1.16. $\dfrac{10}{5\sqrt{13}}$

Q2

Rationalize the denominator for each of the following expressions. Provide your answers in their simplest form and with a positive denominator.

2.1. $\dfrac{5}{2+\sqrt{3}}$

2.2. $\dfrac{7}{4-\sqrt{2}}$

2.3. $\dfrac{3}{\sqrt{5}+1}$

2.4. $\dfrac{\sqrt{7}}{\sqrt{3}-1}$

2.5. $\dfrac{2+\sqrt{5}}{1-\sqrt{2}}$

2.6. $\dfrac{3\sqrt{2}+5}{4+\sqrt{6}}$

2.7. $\dfrac{8}{3-\sqrt{7}}$

2.8. $\dfrac{6}{2+\sqrt{5}}$

2.9. $\dfrac{\sqrt{10}}{\sqrt{2}+3}$

2.10. $\dfrac{2\sqrt{3}+5}{\sqrt{7}-1}$

2.11. $\dfrac{\sqrt{6}-\sqrt{2}}{2+\sqrt{5}}$

2.12. $\dfrac{4+\sqrt{3}}{5-\sqrt{7}}$

2.13. $\dfrac{2}{4-\sqrt{11}}$

2.14. $\dfrac{\sqrt{8}+\sqrt{3}}{\sqrt{7}-2}$

Q3

3.1. The denominator of the expression $\dfrac{\sqrt{11}}{2\sqrt{3}+\sqrt{5}}$ is not of the form $b+c\sqrt{d}$, where b, c and d are integers but you can still rationalize the denominator.

Prove that $\dfrac{\sqrt{11}}{2\sqrt{3}+\sqrt{5}} = \dfrac{2\sqrt{33}-\sqrt{55}}{7}$

3.2. Rationalize the denominator of this expression: $\dfrac{5-\sqrt{2}}{\sqrt{10}-\sqrt{3}}$

Provide your answer in its simplest form and with a positive denominator.

After attempting the questions above, please click this link to find the answers.

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