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*](../studyguides/rationalizingthedenominator.qmd)*.*

## Q1

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

1.1. $ \frac{5}{\sqrt{3}}$

1.2. $ \frac{7}{2\sqrt{5}}$

1.3. $ \frac{11}{4\sqrt{7}}$

1.4. $ \frac{8}{5\sqrt{6}}$

1.5. $ \frac{3\sqrt{2}}{\sqrt{5}}$

1.6. $ \frac{9}{\sqrt{10}}$

1.7. $ \frac{\sqrt{7}}{\sqrt{3}}$

1.8. $ \frac{\sqrt{2}}{\sqrt{6}}$

1.9. $ \frac{12}{\sqrt{11}}$

1.10. $ \frac{\sqrt{8}}{\sqrt{2}}$

1.11. $ \frac{15}{3\sqrt{7}}$

1.12. $ \frac{6\sqrt{3}}{\sqrt{10}}$

1.13. $ \frac{\sqrt{18}}{\sqrt{9}}$

1.14. $ \frac{2\sqrt{5}}{\sqrt{12}}$

1.15. $ \frac{4}{\sqrt{2}}$

1.16. $ \frac{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. $ \frac{5}{2+\sqrt{3}}$

2.2. $ \frac{7}{4−\sqrt{2}}$

2.3. $ \frac{3}{\sqrt{5}+1}$

2.4. $ \frac{\sqrt{7}}{\sqrt{3}−1}$

2.5. $ \frac{2+\sqrt{5}}{1−\sqrt{2}}$

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

2.7. $ \frac{8}{3−\sqrt{7}}$

2.8. $ \frac{6}{2+\sqrt{5}}$

2.9. $ \frac{\sqrt{10}}{\sqrt{2}+3}$

2.10. $ \frac{2\sqrt{3}+5}{\sqrt{7}−1}$

2.11. $ \frac{\sqrt{6}−\sqrt{2}}{2+\sqrt{5}}$

2.12. $ \frac{4+\sqrt{3}}{5−\sqrt{7}}$

2.13. $ \frac{2}{4−\sqrt{11}}$

2.14. $ \frac{\sqrt{8}+\sqrt{3}}{\sqrt{7}−2}$

## Q3

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

Prove that

$$\frac{\sqrt{11}}{2\sqrt{3}+\sqrt{5}}=\frac{2\sqrt{33}−\sqrt{55}}{7}$$

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

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.](../answers/as-rationalizingthedenominator.qmd)

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v1.0: initial version created 01/25 by Maximilian Volmar.

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