

Questions: Rationalizing the denominator

Maximilian Volmar

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. $\frac{5}{\sqrt{3}}$

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

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

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

$$2.13. \quad \frac{2}{4 - \sqrt{11}}$$

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

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.](#)

Version history and licensing

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

[This work is licensed under CC BY-NC-SA 4.0.](#)