

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

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

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### 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  $b$ ,  $c$  and  $d$  are integers 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.

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[After attempting the questions above, please click this link to find the answers.](#)

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