

# Questions: The quotient rule

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## Summary

A selection of questions for the study guide on the quotient rule.

*Before attempting these questions, it is highly recommended that you read [Guide: The quotient rule](#).*

Differentiate the following functions using the quotient rule.

$$1.1. \frac{e^x}{x}$$

$$1.2. \frac{e^{7x}}{x^5}$$

$$1.3. \frac{\ln(x)}{x^2}$$

$$1.4. \frac{e^{-x}}{x^2 + 11x - 2}$$

$$1.5. \frac{x^3 + 5x - 5}{x^2 + 3}$$

$$1.6. \frac{\cos(x)}{x^2 + 3x - 1}$$

$$1.7. \frac{\tan(x)}{\cos(x)}$$

$$1.8. \frac{\ln(3x)}{\ln(5) + x}$$

$$1.9. \frac{x^2 + 3x}{\cos(x)}$$

$$1.10. \frac{\ln(x)}{x^3 + 3}.$$

$$1.11. \frac{5 \tan(x)}{x}.$$

$$1.12. \frac{3x^7 - 27x^2 + 2\sqrt{x}}{x^2 + 1}.$$

$$1.13. \frac{e^{-3x}}{e^{2x}}.$$

$$1.14. \frac{e^3 x^3}{e^x}.$$

$$1.15. \frac{x^5}{x^5 + 1}.$$

$$1.16. \frac{\tan(x)}{\ln(x)}.$$

$$1.17. \frac{3 \sin(x)}{\ln(x)}$$

$$1.18. \frac{\tan(x) + 5x}{\sec(3x)}$$

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

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## Version history and licensing

v1.0: initial version created 05/25 by Sara Delgado Garcia as part of a University of St Andrews VIP project.

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