Questions: The chain rule

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Summary

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

*Before attempting these questions, it is highly recommended that you read* [*Guide: The chain rule.*](../studyguides/chainrule.qmd)*.*

Differentiate the following functions using the chain rule.

1.1. $ \frac{1}{7}cos\left(5+4x\right)$

1.2. $ 4cos\left(x^{2}\right)$

1.3. $ e^{x^{2}+5}$

1.4. $ 2\left(sin\left(2x\right)\right)^{2}$

1.5. $ e^{sin\left(3x\right)}$

1.6. $ ln(2+4x^{−2})^{−1}$

1.7. $ e^{5x^{4}}$ changed

1.8. $ e^{2x^{−3}}$ changed

1.9. $ −5\sqrt{x−2}$

1.10. $ \sqrt{\left(x+3\right)^{2}}$

1.11. $ ln\left(x^{2}+1\right)$

1.12. $ ln\left(cos\left(x\right)\right)$.

1.13. $ 2cos^{2}\left(x\right)$.

1.14. $ 2\left(x^{3}+5x^{2}+13x−1\right)^{3}$.

1.15. $ \sqrt{\frac{1}{2x}}$.

1.16. $ cos\left(5x^{−1/2}\right)$. changed

1.17. $ sin\left(\sqrt{x^{2}+1}\right)$

1.18. $ sin\left(e^{x}\right)$

1.19. $ cos\left(e^{−2x}+5\right)$

1.20. $ ln\left(3x^{3}+sin\left(x\right)\right)$

[After attempting the questions above, please click this link to find the answers.](../answers/as-chainrule.qmd)

## 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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