

# Questions: The chain rule

Sara Delgado Garcia

## 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](#).*

Differentiate the following functions using the chain rule.

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

1.2.  $4 \cos(x^2)$

1.3.  $e^{x^2+5}$

1.4.  $2(\sin(2x))^2$

1.5.  $e^{\sin(3x)}$

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.  $\sqrt{(x+3)^2}$

1.11.  $\ln(x^2 + 1)$

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

1.13.  $2 \cos^2(x)$ .

1.14.  $2(x^3 + 5x^2 + 13x - 1)^3$ .

1.15.  $\sqrt{\frac{1}{2x}}$ .

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

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

1.18.  $\sin(e^x)$

1.19.  $\cos(e^{-2x} + 5)$

1.20.  $\ln(3x^3 + \sin(x))$

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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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