Questions: Introduction to partial differentiation

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Summary

A selection of questions for the study guide on the introduction to partial differentiation.

*Before attempting these questions, it is highly recommended that you read* [*Guide: Introduction to partial differentiation*](../studyguides/introtopartialdifferentiation.qmd)*.*

## Q1

Find all possible first-order partial derivatives for each function .

1.1.

1.2.

1.3.

1.4.

1.5.

1.6.

1.7.

1.8.

1.9.

1.10.

1.11.

1.12.

1.13.

1.14.

1.15.

## Q2

A function is called harmonic if it satisfies the equation

Show that each of these functions is harmonic by calculating the pure second-order partial derivatives and checking that their sum is zero.

2.1.

2.2.

2.3.

2.4.

2.5.

2.6.

2.7.

## Q3

For each function , calculate the mixed second-order partial derivatives and confirm that they satisfy the equation

3.1.

3.2.

3.3.

3.4.

3.5.

3.6.

3.7.

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

## Version history and licensing

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

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