Answers: Integration by substitution

Donald Campbell

Summary

Answers to questions relating to the guide on integration by substitution.

*These are the answers to* [*Questions: Integration by substitution*](../questions/qs-integrationbysubstitution.qmd)*.*

**Please attempt the questions before reading these answers!**

## Answers

### Q1

In these questions, you can either use an appropriate substitution or use the chain rule for integration

1.1. using the substitution or the chain rule with .

1.2. using the substitution or the chain rule with .

1.3. using the substitution or the chain rule with .

1.4. using the substitution or the chain rule with .

1.5. using the substitution or the chain rule with .

1.6. using the substitution or the chain rule with .

1.7. using the substitution or the chain rule with .

1.8. using the substitution or the chain rule with .

1.9. using the substitution or the chain rule with .

1.10. using the substitution or the chain rule with .

### Q2

In these questions, you can either use an appropriate substitution or use the chain rule for integration

2.1. using the substitution or the chain rule with .

2.2. using the substitution or the chain rule with .

2.3. using the substitution or the chain rule with .

2.4. using the substitution or the chain rule with .

2.5. using the substitution or the chain rule with .

2.6. using the substitution or the chain rule with .

2.7. using the substitution or the chain rule with .

2.8. using the substitution or the chain rule with .

2.9. using the substitution or the chain rule with .

2.10. using the substitution or the chain rule with .

### Q3

In these questions, you can either use an appropriate substitution or use the chain rule for integration

3.1. using the substitution or the chain rule with .

3.2. using the substitution or the chain rule with .

3.3. using the substitution or the chain rule with .

3.4. using the substitution or the chain rule with .

3.5. using the substitution or the chain rule with .

3.6. using the substitution or the chain rule with .

3.7. using the substitution or the chain rule with .

3.8. using the substitution or the chain rule with .

### Q4

4.1. using the substitution .

4.2. using the substitution .

4.3. using the substitution .

4.4. using the substitution .

4.5. using the substitution .

4.6. using the substitution .

4.7. using the substitution .

4.8. using the substitution .

4.9. using the substitution .

4.10. using the substitution .

## 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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