VCE Mathematical Methods   
Units 3 and 4

Areas of Study 1 and 3

Example of learning activity: Antiderivatives from derivatives

Introduction

This learning activity looks at how differentiation of particular functions with rules of the form , where *n* is a positive integer, leads to finding an antiderivative of a closely related function. This technique   
is sometimes known as integration by recognition.

Part 1

Let and consider derivatives of functions of the form .

1. Differentiate and hence find an antiderivative for .
2. Differentiate and hence find an antiderivative for .
3. Differentiate and hence find an antiderivative for .

Describe a general process for finding an antiderivative for .

Part 2

Repeat this analysis for:

1. .

Areas of study

The following content from the areas of study is addressed through this learning activity.

|  |  |
| --- | --- |
| **Units 3 and 4** | |
| **Area of study** | **Content dot points** |
| Functions, relations and graphs | 2, 5 |
| Algebra, number and structure | – |
| Calculus | 3, 5 |
| Data analysis, probability and statistics | – |

Outcomes

The following outcomes, key knowledge and key skills are addressed through this task.

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| **Units 3 and 4** | | |
| **Outcome** | **Key knowledge dot points** | **Key skills dot points** |
| 1 | 1, 4, 7, 10 | 1, 11, 13 |
| 2 | 1, 2, 5 | 1, 2, 3, 6 |
| 3 | 3, 4 | 3, 5, 6 |