Week 9/10
Term 1/2
2019

HAWKER COLLEGE
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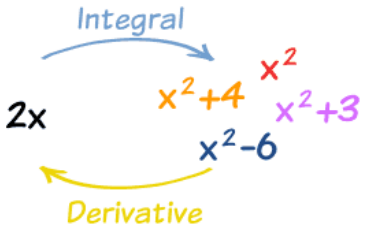
Learning Brief MM3: Integrals

Goals

By the end of this week, you should be able to:

- Integrate various functions by recognition, various rules and by substitution
- Integrate various functions using CAS
- Understand and use integration notation
- Use your CAS to integrate functions



$$\int [f(x) \pm g(x)]\,dx = \int f(x)\,dx \pm \int g(x)\,dx$$

$$\int kf(x)\,dx = k\int f(x)\,dx \quad \int g(x)\,dx = f(x) + c$$

Theoretical Components

JacPlus eBook *Year 12 Maths Quest Methods* (dark blue book) Chapter 9

$f(x)$	$\int f(x)\,dx$
a	$ax + c$
ax^n	$\frac{ax^{n+1}}{n+1} + c$
$(ax+b)^n$	$\frac{(ax+b)^{n+1}}{a(n+1)} + c$
$\frac{1}{x}$	$\log_e \lvert x \rvert + c$
$\frac{1}{ax+b}$	$\frac{1}{a}\log \lvert ax+b \rvert + c$
e^x	$e^x + c$
e^{kx}	$\frac{1}{k}e^{kx} + c$
$\sin(ax)$	$\frac{-1}{a}\cos(ax) + c$
$\cos(ax)$	$\frac{1}{a}\sin(ax) + c$

Read worked examples 1 to 9 on anti-differentiation.
Read worked examples 10 to 12 on integrating special functions.
View worked example 13, read examples 14 to 17 on integrating by recognition.

Practical Components

1. Watch this mini-lecture on Integration:

http://www.intmath.com/integration/integration-mini-lecture-bysubstitution.php

2. Make your notes on the examples shown.

3. Provide two additional fully worked examples on *Integration by Substitution*.

JacPlus eBook *Year 12 Maths Quest Methods*

Exercises 9A, 9B and 9C (Do every 2nd or 3rd question i.e. 1a, c, e; 2a, c, f; 3 etc).

Investigation

Do mathspace.co custom tasks:

- Families of Anti-Derivatives (Week 9)
- Primitives of Exponential Functions (Week 10)

QFO

Quiz/Forum/Other