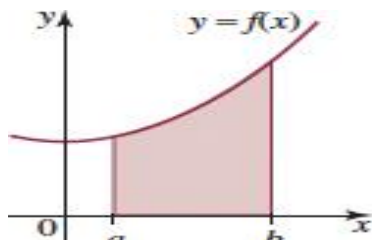


Goals



By the end of this brief, 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
 - Understand the use of areas of rectangles (and other shapes) to approximate the area under a given curve between defined intervals
 - Understand the use of sigma notation and limits to approximate area under a curve
 - Find an exact area under a given curve using definite integrals
 - Use your CAS calculator to integrate functions and find definite integrals
- <http://www.classpad.com.au/>

Theoretical Components

Week 11

- REVISION - GETTING READY FOR THE TEST (Multiple Choice section on GC plus Mathspace.co section – more details to come)

RESOURCES:

- **JacPlus eBook Year 12 Maths Quest Methods Chapter 7**
- **Mathspace.co**

Week 12

- Continue with work set in the homework brief last term - INTEGRATION

RESOURCES:

- **JacPlus eBook Year 12 Maths Quest Methods Chapter 9**
- **Mathspace.co**
- **Good websites for you to peruse:**

Why do we study integration?

<https://www.intmath.com/integration/integration-intro.php>

Antiderivatives and The Indefinite Integral

<https://www.intmath.com/integration/2-indefinite-integral.php>

The Area Under the Curve

<http://www.rootmath.org/calculus/area-intro>

<https://www.intmath.com/integration/3-area-under-curve.php>

Exact area under the curve using definite integral: The first video is 17 minutes long, but worth the watch.

<https://www.youtube.com/watch?v=WUvTyaaNkzM&feature=youtu.be>

<http://www.youtube.com/watch?v=ODwkTt0RMDg&feature=relmfu>

<https://www.youtube.com/watch?v=GtCYrxxTjH4>

<https://www.khanacademy.org/math/ap-calculus-ab/fundamental-theorem-of-calculus-ab/fundamental-theorem-of-calculus-tut-ab/v/fundamental-theorem-of-calculus>

Practical Components

Week 11

The test will cover briefs Week 1 to 7/8/9, inclusive – differentiation rules and applications.

Complete all the mathspace.co tasks set last term if you haven't already done so.

Do the Chapter Review for Chapter 7 – know the differentiation rules such as the power and chain rule, product and quotient rules. Also, know how to find the derivatives of exponential, logarithmic and trigonometric functions, and what the second derivative means.

Week 12

JacPlus eBook Year 12 Maths Quest Methods **Exercises 9A, 9B, 9C, 9D and 9E** (Do every 2nd or 3rd question i.e. 1a, c, e; 2a, c, f; 3 etc).

Investigation

Explain the **Fundamental Theorem of Calculus** in your own words. (What does this theorem mean to you and how do we use it. Could you explain Calculus to someone in Year 11?) Use diagrams to assist in your explanation if you need.

- See page 423 of Chapter 9

- Watch (again) <https://www.youtube.com/watch?v=WUvTyaaNkzM&feature=youtu.be>

<https://www.khanacademy.org/math/ap-calculus-ab/fundamental-theorem-of-calculus-ab/fundamental-theorem-of-calculus-tut-ab/v/fundamental-theorem-of-calculus>



HAWKER COLLEGE

Engage | Inspire | Achieve

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