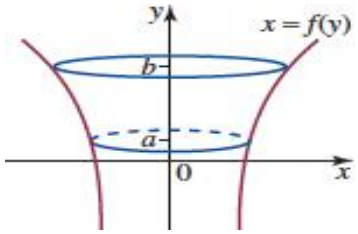
Week 14
Term 2
2015

Learning Brief

SM3 Integrals and Special Functions

Goals



By the end of this week, you should be able to: (the same as last week)

- develop their understanding of the methods of finding volumes of solids of revolution
- develop the skills of drawing and labelling diagrams
- compute the volume of solids of revolution formed by rotating area about the x or y axis using integration
- find the volume of revolution about the x-axis for the function f(x) from x = a to x = b
- find the volume of revolution about the y-axis for the function f(y) from y = a to y = b
- find the volume of revolution about the x-axis for the region between f(x) and g(x) where f(x) ≥ g(x) from x = a to x = b

Theoretical Components

JacPlus eBook *Year 12 Maths Quest Specialist* (orange book) Chapter 6

Cambridge Year 11 Unit 3 Chapter 11

VOLUMES OF SOLIDS OF REVOLUTION

http://www.youtube.com/watch?v=R_aqSL-q6_8
http://www.youtube.com/watch?v=iUzfsUOl3-A
http://www.youtube.com/watch?v=tqfU9mC2yFU
http://www.youtube.com/watch?v=OtmjNuiTHp0
http://www.youtube.com/watch?v=NIdqkwocNuE
http://www.youtube.com/watch?v=F2psxMnGdUw

Shell Method:
https://www.khanacademy.org/math/integral-calculus/solid_revolution_topic/shell-method/v/shell-method-for-rotating-around-vertical-line

Disc Method:
http://www.youtube.com/watch?v=1CbZIM09zF8&feature=relmfu
Washer Method:
http://www.youtube.com/watch?v=8gbphumzbSI&feature=related

Bring headphones to school if you have them

Practical Components

JacPlus eBook *Year 12 Maths Quest Specialist* (orange book) Chapter 6

Do Ex 6G – complete Q20 to 23

Cambridge Year 11 Unit 3
Exercise 11G Questions 6, 13, 19, 20, and 21

Investigation

Investigate Simpson's Rule
http://www.intmath.com/integration/6-simpsons-rule.php
Read the explanation given and copy the example and its solution. Verify with integration and the algebraic process that this is correct. When would it be necessary to use Simpson's Rule or rules such as the Trapezoidal Rule to find area? Give your own worked example of Simpson's Rule.

QFO

Quiz/Forum/Other

No new forum or quiz this week