

July 5, 2007

MATH10560 Exam 1 Study Guide

PRELIMINARIES

- Comfort with all types of integration
- Good understanding and ability to use the Integration Table on page 511

CHAPTER 8

8.7. Approximate integration

- Midpoint rule, Trapezoid rule, Simpson's rule (ex 1,4)
- Error bounds for Midpoint rule, Trapezoid rule, Simpson's rule (ex 2,6)

8.8. Improper integrals

- Infinite interval integrals
- Discontinuous integrals (understanding when to split up the integral at a "problem" point and why it is needed)
- Comparison test

CHAPTER 9

9.1. Arc length

- Good understanding and ability to use the arc length formula
- Given a function, be able to find the length of the curve between point a and b . Remember that you can be in terms of x or in terms of y , but be consistent!
- Recall: $ds = \sqrt{dx^2 + dy^2} = \sqrt{1 + \left(\frac{dy}{dx}\right)^2} dx = \sqrt{1 + \left(\frac{dx}{dy}\right)^2} dy$.

9.2. Area of the surface of revolution

- Understand the basic formula (page 592), where it comes from and how to get it using a differential element (small strip) which we called ds .
- Remember that you can either revolve around x -axis or y -axis, and this will usually give different answers. (Make sure if you revolve around x -axis everything is in terms of x , and similar for y).

EXTRA CREDIT POSSIBILITIES

- Derive the Simpson's rule as on pages 558-559
- Derivation of the arc length formula as on pages 583-584