

MTH 112
Outline for Exam 1
Friday, February 26, 2021

I. Chapter 5

A. Section 5.5 : u -Substitution

- * Identify appropriate substitutions, and use them to evaluate indefinite integrals.

B. Section 5.6 : Area Between Curves

- * Perform u -substitution for definite integrals, and compute areas between curves.

II. Chapter 7

A. Section 7.1 : Exponential and Logarithmic Functions

- * Understand derivatives and integrals involving $f(x) = b^x$ and $f(x) = \log_b(x)$ for any appropriate base (with emphasis on e^x and $\ln(x)$).

B. Section 7.3 : Hyperbolic Trigonometric Functions

- * Know the definitions of $\sinh(x)$ and $\cosh(x)$ in terms of e^x . Know the derivatives of these functions. Know

$$\cosh^2(x) - \sinh^2(x) = 1.$$

III. Chapter 6

A. Section 6.1 : Volumes by Cross-Sections - Disks and Washers

- * Compute the volumes of solids by integrating cross-sectional areas. In particular, compute volumes of solids of revolution via disks and/or washers.

B. Section 6.2 : Volumes by Cylindrical Shells

- * Compute the volumes of solids of revolution using the shell method.

C. Section 6.3 : Arc Length

- * Compute the arc length of curves.

D. Section 6.4 : Surface Areas of Surfaces of Revolution

- * Compute the surface area of surfaces of revolution.