

MAC2311 Test 4 Outline  
5.1-5.5, 5.7, 7.1 (Integration)

5.1 Antiderivatives and Indefinite Integration

Major Objectives

- Find the indefinite integral using the power rule (Exercises 11-43)
- Rewriting before integration (Exercises 14-22)
- Find the general solution for the differential equation (Exercises 3-6)
- Find the particular solution for the differential equation (Exercises 35-42)
- Position, velocity and acceleration applications (Exercises 53-57)

Memorize

- Integration formulas on page 282

5.2 Area

Major Objectives

- Apply sigma notation (Exercises 1-20)
- Approximate area with a given number of rectangles (Exercises 25-30)
- Find the area using the limit definition (Exercises 45-54)

Memorize

- $\Delta x = \frac{b-a}{n}$
- Definition of Area of a Region in a Plane pg 296

Given on Test

- Summation Formulas pg 291

5.3 Riemann Sums and Definite Integrals

Major Objectives

- Set up an integral that represents the area (Exercises 15-26)

Memorize

- Definitions of Two Special Definite Integrals pg 307
- Theorem 5.6 Additive Interval Property pg 307

5.4 The Fundamental Theorem of Calculus

Major Objectives

- Evaluate the definite integral (Exercises 5-38)
- Find the value of  $c$  guaranteed by the Mean Value Theorem (Exercises 49-54)
- Find the average value of the function over the interval (Exercises 55-60)

Memorize

- The Fundamental Theorem of Calculus
- Mean Value Theorem for Integrals
- Definition of the Average Value of a Function on an Interval
- The Second Fundamental Theorem of Calculus

## 5.5 Integration by Substitution

### Major Objectives

- Find the indefinite integral by substitution (Exercises 5-26, 33-54)
- Find the function with the derivative with the given point (Exercises 55-60)
- Find the indefinite integral with the extra substitution (Exercise 61-68)
- Find the definite integral with substitution (Exercise 69-80)

## 5.7 The Natural Logarithmic Function: Integration

### Major Objectives

- Find the indefinite integral (Logarithmic) (Exercises 1-26)
- Find the indefinite integral (Trigonometric) (Exercises 31-42)

## 7.1 Area of a Region Between Two Curves

### Major Objectives

- Find the area of the region between two curves (Exercises 17-30)

Memorize

Integration Formulas on page 282.