MAC 2312 STUDY GUIDE FOR TEST 1

1.) Given a function \( y = f(x) \) on \([a, b]\), calculate the corresponding left/right Riemann sum with a certain number (say \( n = 4 \) or \( n = 5 \)) of subdivisions. (Reference: Quiz 2.)

2.) Given a function \( y = f(x) \) on \([a, b]\), calculate the corresponding Riemann sum with \( n \) subdivisions. Using basic summation formulas and rules (formulas from Theorem 5.2 on page 296 will be provided on the test), simplify the sum. After you simplify the sum, take the limit of the corresponding sum. (Reference: Exercises 47 and 49 on page 305; Quiz 2.)

3.) Calculate integrals using FTC Part 1. (Reference: Exercises 5–37 (odd) on page 327.)

4.) Using FTC Part 2 (and chain rule for differentiation), calculate \( F'(x) \), where \( F(x) \) is defined by an integral. (Reference: Exercises 101–106 on page 329; Quiz 3.)

5.) Find integrals using the method of substitution as in Sections 5.5 and 5.7. (Reference: Quiz 3; Quiz 4; Exercises 7–75 (odd) on pages 340–341; Exercises 95–111 (odd) on page 341; Exercises 7–23 (odd) and 29–37 (odd) on page 358, and 49–55 (odd) on page 359.)

6.) Find integrals that involve completing the square, substitution, and formulas (1) and (2) from Theorem 5.21 on page 361. (Those two formulas will be attached to the test.) (Reference: Quiz 4; Exercises 23, 25, 29, 31, 33, 35, and 39 on pages 366.)

7.) Set up (and maybe calculate) an integral representing the volume of a solid of revolution. (Reference: Examples 1, 2, and 4 on pages 458–461; Exercises 11, 13, 15, 23, 27, 31, 33 on pages 463–464.)

8.) An applied problem involving acceleration, velocity and position. (Reference: Example 8 on page 290; Exercise 77 on page 293.)