Answer Key

Math 132: Discussion Session: Week 2

Directions: In groups of 3-4 students, work the problems on the following page. Below, list the members of your group and your answers to the specified questions. Turn **this paper** in at the end of class. You do not need to turn in the question page or your work.

Additional Instructions: It is okay if you do not completely finish all of the problems (especially the challenge problem), but you should solve most of the problems. Also, each group member should work through each problem, as similar problems may appear on the exam.

Group Members

Group Answers

5.1-5.2: Riemann Sums and Limits of Riemann Sums

1. a. $L_4 = \approx .410236$

   b. $M_5 = \approx 1.30$

   c. i. $R_n = 222 + \frac{189}{n} + \frac{27}{n^2}$

   ii. $\int_2^5 (6x^2 - 4)\,dx = 222$

   d. i. $R_n = 2 + \frac{2}{n} + \frac{8}{n^2}$

   ii. $\int_0^2 (x^3 - x)\,dx = 2$

5.2: Definite Integrals as Signed Area

1. a. $\int_0^2 \sqrt{16 - 4x^2}\,dx = 2\pi$

   b. $\int_{-2}^5 \big(3 + x - 2|x|\big)\,dx = \frac{5}{2}$

5.3: Fundamental Theorem of Calculus Part 1

1. a. $F'(x) = 2xe^{x^2} \cdot \left[\frac{e^{x^2}-1}{e^{x^2}+1}\right]$

   b. $G'(x) = 2x \ln(x^2+3) - \cos x \ln(\sin x + 3)$

2. $F(x) = \int_2^x \sin^2 t + e^{t^2}\,dt$

Challenge Problem Answer

1. a. State the critical point(s) and whether f has a local max, local min, or neither at each one:

critical points : $x=2$ & $x=3$. f has a local max at $x=2$ & a local min at $x=3$

b. State the inflection point(s) and how the concavity of f changes at each one:

F has an inflection point at $x=5/2$.

The concavity changes From down to up. at $x=5/2$.