MT 1810 Calculus II

Exam One Outline

a. Series and Partial Sums (From course activities on Koch Snowflake) (Sections 9.1, 9.2, 9.3, 9.4):

i. Definition
ii. Relationship between Series and Partial Sums
iii. Terms of a series or sum
iv. Sigma notation (able to interpret sigma notation and write a sum/series in sigma notation)
v. Convergence/Divergence
vi. Divergence Test
vii. Comparison Test
viii. Ratio Test
ix. Geometric Series
x. P-series (including harmonic series)
xi. Alternating harmonic series

b. **Taylor Polynomials (Section 10.1 from the book, Course Activities and Webassign)**:

i. Properties of Taylor Polynomials around any $x = a$
ii. Calculating Taylor Polynomials around any $x = a$
iii. Using a Taylor Polynomial as an approximation
iv. Relationship between Taylor Polynomial and series representation of function at a point
v. Convergence/Divergence
vi. Answer questions about Taylor polynomials using graphical, numerical or symbolic information

c. **Riemann Sums and Definite Integral (Section 5.1 and 5.2 from the book, Course Activities and Webassign)**:

i. Definition of Riemann Sum and definite integral
ii. Writing down Riemann Sums
iii. Improving on Riemann Sum approximations
iv. Using Riemann Sums to define the definite integral
v. Using Riemann Sums to estimate the definite integral.
vi. Answer questions about Riemann Sums and the definite integral using graphical, numerical or symbolic information
vii. Distinguishing between series and definite integrals (as limiting values of finite sums).

d. **Applications of (a) – (c) above (Course activities and Webassign)**:

i. Infinite Processes
ii. Area
iii. Velocity
iv. Total Change
v. Volume
vi. Average Value of a Function
vii. Interpret and use graphical, numerical or symbolic information

Recommended Review:

- Course Activities and class notes
- Synthesis Questions
- Webassign Problems
- Text Reading
- Concept Review Activity