

Outline of Math 142 Exam Material

Here are the big topics that you have learned this semester in Math 142 that I feel should be known by the end of the semester. There should be plenty of old test questions, quiz problems, problems from class and examples in the book that will help you study these topics.

- New Functions - \ln , \exp , \sin^{-1} , \tan^{-1} , and inverse functions
 - Applications
 - Derivatives
 - Integrals
- Natural Log - \ln as a tool to help in other problems
- Differential Equations - Separation of Variables, Exponential Decay and Growth Problems
- Integration Methods
 - Variety of Substitution
 - By Parts
 - Partial Fractions
- L'Hopital's Rule
- Improper Integrals
 - How to handle ∞ or $-\infty$ as one of the integrands
 - How to handle if the function is undefined in the range of your integrands
- Sequences - Monotonic Sequence Theorem (Theorem D, page 433), Properties of the limit, Determining if a sequence converges or diverges, Determining the limit of a sequence, reasons why sequences don't converge, what it means for a sequence to converge
- Series - Summing up an infinite number of numbers
 - Different types of series
 - Definition of when a series convergent or divergent
 - Test to show convergence and divergence
 - Summing up series that have some terms that are negative
 - Absolute versus Conditional Convergence
- Power Series -
 - Taylor and Maclaurin
 - Radius of Convergence
 - Approximation Error