What you should know for the Final Exam

Fundamentals of Calculus II

Integration

Words to know: antiderivative, integrand, indefinite integral (definite integral), improper integrals, bounds of integration

You should be able to

- Find definite and indefinite integrals using Calculus I
- Use Substitution to simplify and evaluate integrals
- Use Integration by Parts to simply and evaluate integrals
- Explain why Integration by Parts works
- Understand the geometric interpretation of an integral
- Understand the relationship between integrals and derivatives

Multi-Variable Calculus

Words to know: partial derivative (first order, second order), domain, critical point, relative max/min, double integral, iterated integral, Lagrange Multiplier

You should be able to

- Find the partial derivatives of a function
- Use partial derivatives to find the max/min of a multivariable function
- Explain how Lagrange Multipliers are useful
- Compute Iterated Integrals (multiple integrals)
- Understand the geometric interpretation of a double integral

Differential Equations

Words to know: separable differential equation, First order linear differential equation, initial value, integrating factor

You should be able to

- Understand what it means to solve a differential equation
- Identify types of differential equations

- Solve separable and first order linear differential equations
- Find solution to an initial value problem

Infinite Series

Words to know: diverge, converge, infinite series, infinite sequence, geometric series, harmonic series,

You should be able to

- Determine whether a series converges or diverges (based on tests we know)
- Identify harmonic and geometric series
- Find the value of a convergent geometric series

Other Topics

Words to know: expected value, probability distribution, continuous variable, discrete variable, normal distribution, probability density function, cumulative density function

You should be able to

- Find the expected value of a random variable
- Compute the probability a random variable falls within a range
- Identify discrete versus continuous random variables

Tip: problems on previous test/quizes are an excellent source of practice!