## Math 250: Topics List for Exam #4 {The rest of chapters 6 and 7 is covered in Math 251}

Chapter 6

- 6.1 Velocity and Net change
  - Integrating from acceleration to get velocity and position functions
- 6.2 Area between two curves, Points of intersection Integrating in x versus integrating in y
- 6.3 Volumes of revolution by the disk and washer method Integrating in x vs. integrating in y, Revolving around a line that's not an axis
- 6.4 Volumes of revolution by the shell method Integrating in x vs. integrating in y, Revolving around a line that's not an axis

## Chapter 7

- 7.0 Review of logs and exponentials
  - Properties of logs: expand, combine, graph, change of base formula

Solve exponential & log equations

Graphs of logs and exponentials

Domain and range, Limits and continuity, Asymptotes

Inverse relationships: Graphs, Properties

## 7.3 Inverse functions

Verifying two functions are inverses by algebra

Graph relationship between inverse functions

One-to-one and HLT

Find inverse algebraically when possible or ordered pair on graph of inverse function

Using the derivative to check HLT

Derivative of inverse function at a point

Reciprocal slopes of function and inverse at corresponding points

7.2 Definition and derivatives of natural log, e (Natural) logarithmic differentiation

Integrate  $\int \frac{1}{x} dx$ 

Integrate all trig functions

Definition and derivative of natural exponential function, properties

Integrating natural exponential function

7.3 Exponential functions with bases other than e

Differentiating

Integrating

Log functions with bases other than e

Differentiating

Integrating

7.4 Applications of Exponential functions Growth rate vs. Relative growth rate Exponential growth and decay