

**Math 1A**  
**Midterm 3 Review**

- [1] Review all individual quiz questions and their solutions.
- [2] Practice as many related rates and optimization problems as possible using the process in the handout.
- [3] Make sure you know how to solve the following problems, and the reasoning and full process behind your solutions.

**Do not use shortcuts, and do not skip steps. Where relevant, watch out for discontinuities, endpoints, points outside the domain, and points in the domain where the first or second derivative are undefined.**

3.10 5, 19, 27  
4.1 11, 13, 55  
4.2 5, 7, 11  
4.3 7, 11, 31, 53  
4.4 1-4, 15, 33, 45, 57, 63  
4.5 27, 51

Chapter 4 Review

True-False 1-15, 19-20

Exercises 1, 3, 15, 21, 23, 45

You should be able to do all questions without a calculator.

- [4] Know the definitions, theorems and tests:

Definition of absolute/global/relative/local maximum/minimum  
Definition of critical number  
Definition of increasing/decreasing (from lecture and chapter 1)  
Definition of concave up/down (from lecture)  
Definition of inflection point

Extreme Value Theorem  
Rolle's Theorem  
Mean Value Theorem

First Derivative Test for local extrema  
Second Derivative Test for local extrema  
(what these two tests tell you, and when they can or **cannot** be used)