MIDTERM 3 STUDY GUIDE

PEYAM RYAN TABRIZIAN

Midterm 3 takes place on **Friday, July 29th at 10:10 am**. The midterm counts for 20 % of your grade, and covers sections 3.9, 3.10, 4.1 - 4.5, and 4.7. This is the study guide for the exam, and contains **everything** you'll need to know for the exam. The material in **bold** I feel is more important than the rest, so make sure to spend more time on those ones than on the other ones.

Note: 1.3.4 means 'Problem 4 in section 1.3'

Know how to:

CHAPTER 3: DIFFERENTIATION RULES

- **Solve related rates problems** (3.9.6, 3.9.10, 3.9.15, 3.9.19, 3.9.27, 3.9.30, 3.9.31, and the problems on the related rates handout)
- **Use linear approximations (or differentials) to estimate a given number** (3.10.23, 3.10.24, 3.10.25, 3.10.26, 3.10.28)

CHAPTER 4: APPLICATIONS OF DIFFERENTIATION

- Given a formula, find the critical points of a function (4.1.29, 4.1.31, 4.1.34, 4.1.38, 4.1.41, 4.1.43)
- **Find the absolute maximum/minimum of a function using the closed interval method** (4.1.47, 4.1.48, 4.1.49, 4.1.52, 4.1.53, 4.1.60, 4.1.61)
- **Use Rolle's theorem (and the IVT) to show that an equation has exactly one solution or at most one solution** (4.2.17, 4.2.18, 4.2.19)
- **Solve problems using the Mean Value Theorem** (4.2.23, 4.2.24, 4.2.25, 4.2.26, 4.2.28, 4.2.35, 4.2.36)
- **Use l'Hopital's rule to evaluate limits** (any problem between 4.4.5 and 4.4.64 works, for example, try 4.4.5, 4.4.13, 4.4.15, 4.4.17, 4.4.19, 4.4.21, 4.4.27, 4.4.29, 4.4.40, 4.4.43, 4.4.47, 4.4.51, 4.4.53, 4.4.59, 3.3.63)
- **Graph functions, using the DISAIC method (see graphing handout)** (4.5.5, 4.5.11, 4.5.13, 4.5.25, 4.5.37, 4.5.39, 4.5.43, 4.5.49)
- Find slant asymptotes of a function (4.5.57, 4.5.49)
- **Solve optimization problems** (4.7.3, 4.7.5, 4.7.11, 4.7.12, 4.7.17, 4.7.18, 4.7.19, 4.7.21, 4.7.22, 4.7.23, 4.7.24, 4.7.26, also see optimization handout)