

Math 1A

Midterm 3 Review

Midterm 3 is currently scheduled for Tue Mar 15 and will include sections 3.9, 4.1–4.5 and 4.7.

If you do well on this midterm, you can use it to bring up your score from either midterm 1 or midterm 2.
(See the earlier note on Fri Feb 25.)

[0] **Do all assigned homework before you look at the review.** If you skip the homework and only practice this review material, you will probably not be able to finish the midterm in the allotted time because you have to spend too much time trying to remember what the reasoning is or what you should do next.

[1] Know the definitions, theorems and tests. Review the Language of Theorems handout from my website.

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, **not the textbook**)
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)

[2] Review all individual quiz questions and their solutions.

[3] Practice as many related rates (3.9) and optimization (4.7) problems as possible using the processes in the handout. From this point on, the related rates questions will **NOT** be based on the Pythagorean theorem.

[4] Make sure you know how to solve the following problems,
and **show 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.

As you do these questions, if you find you don't know the next step without looking it up or thinking about it a lot, then you haven't gotten enough practice from the homework yet, so go back and do more before you continue with the review.

4.1	11, 13, 56 (using interval $[-1, 8]$)	+	Chapter 4 Review	1, 3
4.2	3, 5, 7, 11	+	Chapter 4 Review	45
4.3	7, 11, 31, 53			
4.4	1-4, 15, 33, 45, 57, 63			
4.5	27, 51	+	Chapter 4 Review	15, 21, 23
	Chapter 4 Review True-False 1-15, 19-20			

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