

Math 125.501 Final Exam Review Sheet

Final Exam will be on **Tuesday, May 5, 6-8 p.m.** in ILB 360.

The exam will be cumulative. No books, notes, or calculators will be allowed on the test. For full credit, solutions of the exam problems must be correct and clearly written, and you must show all your work.

Review the material of the corresponding chapter before solving the problems. Read the summary at the end of each section.

Review problems:

Chapter 2

p. 115-117 Ex. 1, 11, 15, 26, 35, 37, 39, 41, 44, 45, 47, 51, 55, 63

Chapter 3

p. 207-210 Ex. 1, 4, 5, 7, 19, 29, 33, 37, 39, 43, 45, 51, 55, 61, 63, 65, 69, 91, 92, 103

Section 3.2 Ex. 49

Section 3.7 Ex. 90, 93

Section 3.8 Ex. 30

Section 3.9 Ex. 9, 11

Section 3.10 Ex. 37, 39

Section 3.11 Ex. 13, 15, 19

Chapter 4

p. 294-297 Ex. 1, 5, 7, 20, 23, 27, 29, 37, 45, 49, 50, 55, 63, 69, 83, 85, 89, 91

Section 4.6 Ex. 11, 13, 15, 37

Section 4.7 Ex. 9, 12, 15, 35

Chapter 5. Go over the Hw problems as needed:

Section 5.1 Ex. 9, 13, 15, 19, 25, 31, 35, 37, 39

Section 5.2 Ex. 1, 3, 7, 8, 13, 19, 51, 53, 55, 57, 59, 61, 75, 76

Section 5.3 Ex. 1, 3, 9, 17, 19, 27, 29, 31, 35, 37, 45

Section 5.4 Ex. 3, 5, 7, 13, 15, 17, 19, 21, 27, 29

Section 5.5 Ex. 1, 3, 5

In addition, you should be able to state

- Definition of continuity
- Definition of the derivative
- The Mean Value Theorem
- The Fundamental Theorem of Calculus, Parts I and II

Chapter 5 Review Topics:

- How do we write sums using summation notation ?

Let f be a continuous function on $[a, b]$.

- How to compute R_N , L_N , M_N and how to sketch the corresponding rectangles ?

- What is a Riemann sum?

The definite integral of f over $[a, b]$ is the limit of Riemann sums as $\|P\| \rightarrow 0$.

- How to find integrals using areas?

Make sure that you can compute areas of rectangles, triangles, and circles.

- What are the properties of definite integral ?

- FTC, Part I: What is the statement ? How to use it ?

- FTC, Part 2:

What is the statement ?

How to find the antiderivative $A(x)$ of $f(x)$ satisfying $A(a) = 0$?

What is $\frac{d}{dx} \int_a^x f(t) dt$?

How to differentiate $\int_a^{g(x)} f(t) dt$?

- What does the statement *Integration and differentiation are inverse operations* mean?

- Given a rate of change, how to find the net (total) change over $[a, b]$?