## Topics that student must prepare for their final exam

You are expected to know everything from the beginning of the textbook , but our focus in the final exam will be on the following things:

- 1. know how to draw graphs with Calculus (section 4.5).
- 2. know the "Absolute Maxima and Minima" problems (section 4.7). From section 4.7 you should know these exercises from the textbook:

$$20, 24, 26, 32, 34, 46, 50, 54, 62, 64$$

We will change the quantities in the question from the list that appears in your final exam.

3. know the "Related Rate" problems (section 4.9). From section 4.9 you should know these exercises from the textbook:

 $2 \ , \ 4 \ , \ 6 \ , \ 10 \ , \ 12 \ , \ 16 \ , \ 20 \ , \ 22 \ , \ 24 \ , \ 26 \ , \ 32$ 

We will change the quantities in the question from the list that appears in your final exam.

4. know how to use differentiation to prove an inequality. Examples of such problems can be found in section 4.2 exercises 44, 45, 46, 47, 48, and 53.

- 5. know how to calculate indefinite integrals using some elementary methods that do not require change of variable (section 5.1)
- recover a function by having some information about its first and second derivatives (examples of such questions can be found in section 5.1 exercises 21 to 27).
- 7. apply the change of variable technique to calculate a given indefinite integral (section 5.3).
- 8. know how to calculate definite integrals using the First Fundamental Theorem of Integral Calculus (section 6.4)
- 9. apply the change of variable technique to calculate a given definite integral (section 6.7).
- 10. know the properties of indefinite and definite integrals cited on pages 338 and 390 (Theorems 5.2, 6.4, and 6.5).
- 11. know tables of differentiation and integration ; in other words , no formula sheet will be given in the final exam. A table of integration can be found on pages 338 and 339 of the textbook. From that table only these formulas you are required to know: (5.4 a) , (5.4 b) , (5.4 c) , (5.4 d) , (5.4 e) , (5.4 f) , (5.4 j) , (5.4 k) , (5.4 l) , and (5.5).
- 12. know how to use the chain rule.

- 13. know implicit differentiation .
- 14. know logarithmic differentiation .
- 15. differentiate functions that involve logarithmic and exponential expressions (section 3.11),
- 16. <u>Note</u>. You will not be asked on how to derive the formulas in the textbook. You will not be asked to prove any of the theorems of the textbook.