

Test 4 Study Guide

Things you should know in addition to the material on the test 3 study guide.

1. Implicit differentiation and related rates.
 - (a) Use implicit differentiation to find the equation of a tangent line.
 - (b) Related rates word problems.
 - i. Read the problem and find an equation that relates the variables.
 - ii. Implicitly differentiate the equation and look to see what other values are needed.
 - iii. Go back and reread the problem and see if you can derive the necessary information.
 - iv. Solve for the desired rate of change.
2. Increments, Differentials, and Linear Approximation.
 - (a) Be able to compute a linear approximation of a function.
 - i. Be able to approximate quantities like $\sqrt{24}$ using linear approximation.
3. Increasing and decreasing functions.
 - (a) Be able to find the intervals on which a function is increasing and decreasing.
 - (b) Be able to show that a particular equation has exactly one solution on a given interval.
 - (c) Be able to use the first derivative to sketch a rough sketch of a function.
4. Open-Interval Maximum-Minimum Problems.
 - (a) Be able to use the first derivative test to classify all critical points as local mins/maxs or global mins/maxs on a given open interval.
 - (b) Be able to solve word problems like those assigned in the homework from § 4.4.

My office is Boyd 434E and my email is chadm@math.uga.edu. If you need help, let me know. Remember it is my job to help you understand this material.