

Math 121 Final Exam Topics Spring 2015

1. Curve sketching. Make a sign chart for the first and second derivative, identify critical points, points of inflection, intervals where the function is increasing and decreasing, concave and concave down, and any horizontal or vertical asymptotes. See Section 4.4 and Quiz 8.
2. Solve an optimization problem. Requires that you give a formula for $f(x)$ given a verbal description, find the domain, find all critical points, find all boundary points. Apply the second derivative test to all the interior critical points. See Section 4.5 and Quiz 9.
3. Use Newton's Method to solve $f(x) = 0$. See Section 4.6.
4. Solve a motion problem using the method of antiderivatives and $a(t) = 32$ ft/sec² or $a(t) = 9.8$ m/sec². See Section 4.7.
5. Approximate a definite integral using a Riemann sum and a given number of intervals N . See Sections 5.1 and 5.2.
6. Compute a definite integral using the Fundamental Theorem of Calculus. See Section 5.3.
7. Solve an applied problem using a definite integral as in Sections 5.3 (problems 51, 53, 59) and 5.5 (problem 63).
8. Compute an indefinite integral (antiderivative) using the substitution method. See Section 5.5.