

242 - Differential Equations: Test 1 Study Guide
Henson - Summer 09

TEST 1 TOPICS:

**Make sure to know all derivative rules and integration techniques from Calc I and II.

1. Identify characteristics of a D.E. (order, linear, nonlinear, ODE, PDE, etc.)
2. Check if a function is an explicit solution to a D.E.
3. Check if an implicit equation is a solution to a D.E.
4. Given initial conditions, compute the unknown C in a general D.E. solution
5. Draw direction fields (long way or use isoclines)
6. Sketch a solution curve on a direction field given initial conditions
7. Approximate a D.E. solution using Euler's Method
8. Determine if a D.E. is separable
9. Solving a separable D.E.
10. Solving linear, 1st order ODE's (use $\mu(x)$)
11. Be able to compute the appropriate choice for $\mu(x)$
12. Identify an exact equation
13. Solve exact equations (use the total differential of F)