

Final form: Thu Mar 15 18:22:01 MST 2007 /m333.sp07/handouts333/t2_333_316/review_suggestions_2.tex

- 1 This list is now in final form.
- 2 Test #2 is

Friday
3/16/07.
- 3 The test will emphasize the material of Assignments #7 – #10 and #11. The test will mostly be concerned with second-order linear differential equations, *mostly* with real constant coefficients. See also the topic list below.
- 4 No calculator is needed. This test is very algebraic.
- 5 Note that an Assignment-#10 answer key has been posted.
- 6 Topics to know about:
 - (a) The function **Step**.
 - (b) The Existence and Uniqueness Theorem for general driven second-order linear differential equations (where the coefficients are not necessarily constants).
 - (c) What is a BSS (Basic Set of Solutions)?
 - (d) For undriven differential equations with *real* constant coefficients, the characteristic polynomial: how does it arise from the differential equation?
 - (e) For undriven differential equations with *real* constant coefficients: the roots of the characteristic polynomial and their corresponding BSSs.
 - (f) Alternative BSSs: how do you check that a set of function actually *is* a BSS?
 - (g) Matrix Cramer. This was introduced as a quick way to solve some systems of two equations with two unknowns. We will see that Matrix Cramer has further ramifications.
 - (h) The Wronskian relates to Matrix Cramer.
 - (i) The Wronskian satisfies a first-order linear differential equation. And why does that turn out to be important?
 - (j) For undriven differential equations with *real* constant coefficients: solving initial-value problems.

- (k) For *driven* differential equations, how is a general solution formula related to the associated undriven equation.
- (l) Use *the Method of Undetermined Coefficients* to help get a general-solution formula for some driven equations.
- (m) Use *the Method of Variation of Parameters* to help get a general-solution formula for some driven equations.
- (n) In solving initial-value problems for driven equations, one must not impose initial conditions too early in the game.
- (o) Most, but not all, of the driving-function types we saw in undetermined-coefficients problems were themselves solutions of undriven equations. Which ones?