

Preparation sheet for Final Exam

Problems on this Test will be based on the homework problems listed below.

Note 0: Assignments are listed in reverse chronological order because the most recent assignments will have higher weight in the total score. Therefore, I recommend that you begin your preparation with the most recent items on the list below. (The only exception from this rule will be the exam problem based on HW # 2: even though it is an “early” HW, the corresponding problem’s weight will still be sufficiently high.)

Note 1: The notation, e.g., 2.1.3, means ‘Problem 3 of Sec. 2.1’.

Note 2: You should check the original homework assignment for hints, notes, or answers for any of the problems listed with an asterisk (e.g., 2.1.3*).

Note 3: A problem on the Test may combine concepts of more than one problem listed on this sheet, or it may use only part of the solution of a given homework problem.

Note 4: Problems within one HW assignment, but pertaining to different topics, are separated by a semi-colon and a larger space.

Note 5: If you notice that some of the problems on this preparation sheet are similar to problems from midterms, you should consult the posted solutions for those midterms on how the corresponding problems were to be done.

When preparing for the Test, it will be beneficial for your performance if you **redo** the problems listed below, and also review the related examples in the notes and in the book. Please **note**: It will **not be helpful** if you simply browse those problems **without actually doing them**.

If you can do a problem but are not confident that you can do it fast (as will be expected on the Test), you should redo it multiple times (taking breaks in between) until you *can* do it fast and with confidence. This is the same concept as that of doing multiple repetitions of a physical exercise to make your muscles master and remember it.

On this Test, use of a *non-graphing* calculator will be allowed (although you will not really need one). You may also prepare and use two double-sided sheets with formulas. There, you may write *anything* that you think may be useful to you on the Test: formulas, solutions of examples, pictures, etc.. However, make sure that those things are related to this Preparation sheet. That is, do *not* put there formulas “just in case”: if they were not needed when you worked on this Preparation sheet, then they will not be needed on the Test.

1. **HW 27:** Do the entire assignment. (All but two of its problem will be directly related to problems on the exam.) Pay attention to the additional assignment for ## 15,17,18 (and, as always, to the Notes and Hints).

- Do *not* include a table of Laplace transform pairs in your preparation sheet: I will give you such a table.

- The partial fraction expansion that you will need to do will be as simple as that in the example done in class and in ## 42, 43; however, you still will *need to practice* doing that expansion in these simple cases.
- You **DO** need to know the Shift theorems and the formulas of Laplace transform of derivatives. (That is, I will **NOT** provide you with those formulas.)
- While problems from HW 26 are not listed, I recommend that you still do them, as they provide a foundation for the problems in HW 27.

2. **HW 25:** ## 4.8.{15*, 16*, 17*, 18*}.

On the Test, you should *use* the appropriate formula, but should *not* derive it.

3. **HW 24:** ## 4.6.{1*, 3*, 5*; 11*, 13*, 17*}; 4.5.{1*, 3*, 5*}.

4. **HW 23:** ## 3.11.{7*, 9*, 10*; 11*, 13*, 23*, 25*}, 4.3.{25*, 26*}.

5. **HW 19:** ## 3.10.{11(a*,c), 7*}; Word Problem.

You must know not only the formula, but also how to plot the corresponding solution.

6. **HW 17:** ## 3.8.{4*, 12*}; Word Problem 2.

7. **HW 15:** ## 3.6.{7*, 9(a), 11}, Word Problem.

8. **HW 14:** ## 3.5.{13*, 15*}; 3.5.{2(a,b)*, 3(a,b), 9(a,b)}.

9. **HW 13:** ## 3.4.{3*, 7*}.

10. **HW 12:** ## 3.3.{3*, 7*}.

11. **HW 8:** ## 2.8.{4*, 5, 6*, 7}.

12. **HW 7:** ## 2.6.{35, 37, 36*}.

13. **HW 5:** ## 2.6.3(a).

14. **HW 4:** ## 2.3.{1, 7(a,c), 6(a,b)*}.

15. **HW 2:** ## 2.2.{3, 20*; 4*, 7, 21; 36*, 37}.

You must know, and be able to apply, the formulas for the solution of linear homogeneous and nonhomogeneous DEs.