REVIEW SHEET FOR THE FINAL EXAM

Comprehensive final exam will include some material from review sheets 1, 2, and 3 in addition to the material below. The best way to prepare for a final is to review homework problems, examples, definitions, and theorems from the textbook and class notes. Make sure that you can solve problems in a reasonable amount of time without reference to the textbook or class notes. It is important that on the final you show all your work and explain your answers. Just answers (especially wrong ones!) without any explanation will earn you no credit.

List of major topics covered in class.

1. Sections 4.1 and 4.2. Forced harmonic oscillators. Extended linearity principle, forced response, steady-state response, natural or free response Method of Undetermined Coefficients. Review Problems: # 5, 7, 15, 17, 21, 25, 35, 39 on pp. 399-402; 5, 7, 11, 13   on pp. 412-413.

2. Section 6.1. Definition of the Laplace transform, Laplace transform of exponential function, Laplace transform of a derivative, linearity of Laplace transform, inverse Laplace transforms, Laplace transform of a power function. Review Problems: #1, 3, 9, 13, 14, 15, 16, 17, 22 after 6.1.

3. Section 6.2. Discontinuous functions. Heaviside function and its Laplace transform. Differential equations with discontinuity - see examples from 6.2 and from class. Review Problems: # 2, 3, 5, 7, 9, 11, 13 after sec. 6.2

4. Section 6.3. Solving second-order equations. Laplace transforms of exponential and trigonometric functions. Examples of solutions using Laplace transform from class and from section 6.3. Review Problems: 15, 17, 27, 29, 32, 33 on pp. 599-601.

Good luck!