MATH 242
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Homework Problems for Chapter 5

Due: the class meeting following discussion in class

Section	Page	Problems
5.1	203	# 1, 4, 5, 6, 7
5.2	210	# 2, 3, 6, 7
5.3	216	# 1, 4, 6, 7
5.6	238	# 7, 10, 11, 12

Notes

- These problems are chosen as the minimum set of problems that you should solve. The problems in Chapter 5 emphasize the ability to translate a physical description into a mathematical problem, compute a quantity, then express the answer in terms of the original problem.
- This chapter will apply all the techniques discussed in Chapter 4. In particular, we will have to be able to solve both homogeneous and non-homogeneous second order ODEs with constant coefficients. Since we have already mastered these techniques, the focus of this chapter is the applications.
- New vocabulary is introduced in sections 5.1, 5.2, and 5.3. You need to become familiar with these terms. I find it helpful to try to relate the different quantities to the graph of the solution.
- Some of the problems do not call for the solution of a differential equation. The question can be answered completely once the problem is formulated. (Problems 4 and 8, p. 203, are of this type.)
- Be certain that you answer all the questions posed in each problem. For example, in problem 5 (§5.1), find the time when the mass first reaches it's minimum height (this is different from the minimum displacement from equilibrium).
- The problems in Section 5.6 refer to the Runge-Kutta method. Instead, use the Improved Euler method (for systems) that I have implemented in the worksheet `sec5-6.ms`. All of the problems can be answered using the outline presented in that worksheet. Be certain that you clearly answer all questions posed in the problems.
- *I do not recommend the memorization of any formulas!* The important idea is that you understand how the equations are derived, how to find a solution to the equation, and then be able to interpret the solution to answer a question.
- If you have any difficulties, please ask for assistance.