

Homework 3

Due September 27

Before writing your solutions commit yourself to being correct and clear throughout your arguments. In order to receive any credit the grader must be able to follow your arguments.

Again, this is a collaborative assignment to be worked in pairs of students. Both students will receive the same grade, so it is each person's responsibility to make sure that everyone does a fair share of the work. If you choose to work individually on this assignment, please write down the reason for doing so.

1. (10 points) Problem 1 page 51.
2. (12 points) Problem 4 page 52.
3. (10 points) Problem 1 page 56.
4. (10 points) Problem 3 page 56.
5. (10 points) Problem 6 page 57.
6. (13 points) Problem 1 page 63.
7. (10 points) Problem 4 page 64.
8. (10 points) Problem 5 page 68.
9. (15 points) In few lines describe how the Laplace equation is related to the heat equation. How does the heat equation *differ* from the wave equation? (Hint: think of the derivation of the two equations, then look at the behavior of the energy for the two equations; you may also use exercise 7 page 57 to compare the two PDEs.)