

MATH 333: Partial Differential Equations

Problem Set 12, Final version

Due Date: Wed., Nov. 29, 2006

1. Do Exercise 4.22. For part (a), the explicit finite difference scheme is the one from Exercise 4.20, part (c).
2. Do Exercise 6.2.
3. Compare and contrast Theorems 3.1 and 6.2. The former was established using energy-type arguments, whereas the latter is classified as a maximum-type principle. Both may be used to establish that a certain kind of heat problem has a certain kind of stability. (You were asked about this in the case of Theorem 3.1 in Problem 7 of Problem Set 2; the stability from Theorem 6.2 is stated as Corollary 6.1.) Is this an example of establishing the same result twice? Or does one result tell you something that the other did not? Explain.