

Partial Differential Equations - Homework Day 4

Professor:

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Homework

1. *Farlow* - Do all problems at the end of Lesson 6.
2. *Additional Problem - Challenge* - Show that separation of variables fails when the boundary conditions are non-homogeneous. Discuss why it fails. Hint: Try to solve the following PDE directly with separation of variables

$$u_t = u_{xx}; \quad u(0, t) = c_1, \quad u(L, t) = c_2; \quad u(x, 0) = \phi(x)$$

Read and Take Notes (prep for next class)

1. *Farlow* - Lessons 7
2. **Submit your class prep notes on Canvas.**

Other Notes:

1. Make sure to be reading ahead of the class and taking notes!
2. **BOOK TYPO** Farlow Lesson 6 - Problem 1 should read:

$$u_t = \alpha^2 u_{xx}; \quad u(0, t) = 0, \quad u(1, t) = 1; \quad u(x, 0) = \sin(\pi x) - 1$$