

Partial Differential Equations - Homework Day 10

Professor:

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Read and Take Notes

1. *Farlow* - Lesson 10

Homework

Problems - Use the Eigenvalue Integral Transform method learned in class. Make sure to clearly define your transform and show how you transform each piece.

- 1.

$$u_t = u_{xx} + e^{-t} \sin(\pi x)$$

$$u(0, t) = 0$$

$$u(1, t) = 0$$

$$u(x, 0) = 1$$

- 2.

$$u_t = u_{xx} + \sin(3x)$$

$$u(0, t) = 0$$

$$u(\pi, t) = 1$$

$$u(x, 0) = \sin(x)$$

$$0 < x < \pi$$

- 3.

$$u_t = u_{xx} + 1$$

$$u_x(0, t) = 0$$

$$u_x(1, t) = 0$$

$$u(x, 0) = \cos(2\pi x)$$