

Partial Differential Equations

Homework Day 1

Professor:

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Homework

This should be handed in as part of HW1 - due Sunday by 11:59pm

1. *Farlow* - Do all problems at the end of Lesson 1.
2. *REVIEW - ODEs* - Problems Below
3. Choose one problem from this assignment that you would like to type up with a full explanation of your logic.

Remember to explain in words what you are doing/thinking as you are solving these problems. Your mathematics in your homework should read as complete and logical sentences even if they are mostly mathematical symbols!

ODEs Review

Solve the following problems from ordinary differential equations. Apply the initial conditions if given. Assume $y = y(t)$

1. $y' + 3y = 0$
2. $y'' + 25y = 0$
3. $y'' - y = 0$
4. $y'' + 6y' + 9y = 0; y(0) = 1 \quad y'(0) = 1$

5.

$$y'' + 16y = e^{3x}$$

6.

$$y'' + 9y = 10 \cos(2t); \quad y(0) = y'(0) = 0$$

7.

$$y'' + 9y = \cos(3t)$$

8. EXTRA - Challenge: list all possible solutions assuming a and b are constant real numbers.

$$y'' + ay' + by = 0$$

Read and Take Notes (prep for next class)

1. *Farlow* - Lessons 1-3 - NOTE - Today in class we covered lesson 1. Lessons 2-3 are assigned reading to allow you to read ahead. Please do this! Take notes, look up terms that are new, and see how much you can understand before I present the material in class.
2. **Submit your class prep notes on Canvas.**
Daily Class Prep and Reading 9/5
3. (optional) *REVIEW - Edwards and Penney* - Second Order Linear Equations Chapter 3 Pages 145–209 or Read through the ODE review on the website.

Other Notes:

1. It's okay if these are hard for you! Please don't give up. Keep trying and come get help.
2. Once you submit a draft of your homework you can see my solutions. You should attempt every problem before asking for the solutions!
3. You can check your answers using Wolfram, your calculator, or a graph. Don't assume you are wrong just because answers don't match, you might need to do some algebra to make them look the same.