

Differential Equations – Homework 14

Professor:

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Homework 14

Directions: Do the following problems

1. $y'' + y = x \cos^3(x), \quad y(0) = 1, \quad y'(0) = 0$

2. $y'' + y = 4x \sin(x) + \cos(2x)$

3. $y^{(3)} - 6y'' + 9y' = 5 + \sin(x)$

- First solve the problem the “long way” going through all the steps of MUC. You can do this by hand or using Python/Colab.
- Second use Sympy dsolve to check your answer
- Convince yourself that your answers match.

Other Notes:

1. It is okay if you break the code a lot at first. The best way to get good at programming is to program, break things, and figure out what went wrong!
2. CHALLENGE: Can you program Python to do all the steps in VOP - for a second order ODE?