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## Math 2150 - Homework # 8

### Undetermined coefficients

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1. Find a general solution to the given ODE on  $I = (-\infty, \infty)$ .

To do this first find the homogeneous solution  $y_h$  and a particular solution  $y_p$ .

(a)  $y'' + 3y' + 2y = 6$

(b)  $y'' - 10y' + 25y = 30x + 3$

(c)  $y'' + 4y' + 4y = 4x^2 - 8x$

(d)  $y'' + 3y' - 10y = 6e^{4x}$

(e)  $4y'' - 4y' - 3y = \cos(2x)$

(f)  $y'' + 3y = xe^{3x}$

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**Problem 2 below is optional. We did not cover how to solve these in class. But if you want more to learn about it then just look in the notes in the website.**

2. Find a general solution to the given ODE on  $I = (-\infty, \infty)$ .

To do this first find the homogeneous solution  $y_h$  and a particular solution  $y_p$ .

(a)  $y'' - y' = -3$

(b)  $y'' - 16y = 2e^{4x}$

(c)  $y'' + 2y' = 2x + 5 - e^x$

(d)  $y'' + 2y' = 2x + 5 - e^{-2x}$

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