Math 2150 - Homework # 8

Undetermined coefficients

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) $\frac{1}{4}y'' + y' + y = x^2 - 2x$

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

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

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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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3. Solve the given initial-value problem on the interval $I = (-\infty, \infty)$.

   (a) $y'' + 3y' + 2y = 6, \quad y'(0) = 0,\ y(0) = 0$

   (b) $y'' + 2y' = 2x + 5 - e^{-2x}, \quad y'(0) = 1,\ y(0) = -1$
