Math 2150 - Homework # 7

Second order homogenous constant coefficient ODEs

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

   (a) $4y'' + y' = 0$

   (b) $y'' - y' - 6y = 0$

   (c) $y'' + 9y = 0$

   (d) $y'' - 2y' + 2y = 0$

   (e) $\dfrac{d^2y}{dx^2} + 8\dfrac{dy}{dx} + 16y = 0$

   (f) $\dfrac{d^2y}{dx^2} - 10\dfrac{dy}{dx} + 25y = 0$

   (g) $2y'' + 2y' + y = 0$

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

   (a) $4y'' + y' = 0, \quad y'(0) = 0,\ y(0) = 0$

   (b) $y'' + 16y = 0, \quad y'(0) = -2,\ y(0) = 2$

   (c) $y'' - y' - 6y = 0, \quad y'(0) = 10,\ y(0) = 5$
