1. [15 points] Find explicit, real-valued solutions to each of the following, as indicated. For this problem, DO NOT use Laplace transforms.
   a. [7 points] Find the general solution to \(2U''(t) + 12U'(t) + 16U(t) = 12e^{4t}\).
   b. [8 points] Find the solution to the initial value problem \(y''(t) + 6y'(t) + 9y(t) = 3e^{-3t}\), \(y(0) = 0\), \(y'(0) = 1\).