

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 $y''(t) + 6y'(t) + 9y(t) = 3e^{-3t}$, $y(0) = 0$, $y'(0) = 1$.