

2. [15 points] Find explicit, real-valued solutions to each of the following, as indicated. For this problem, **DO use Laplace transforms**.

a. [7 points] Find the solution to the initial value problem  $y'' + 4y' + 20y = 0$ ,  $y(0) = 1$ ,  $y'(0) = 5$ .

b. [8 points] Find the solution to the initial value problem  $y'' + 3y' + 2y = e^{-t}$ ,  $y(0) = 0$ ,  $y'(0) = 0$ .