

1. Consider the equation $y'' + 4y' + 3y = 0$.
 - a. Write the corresponding characteristic equation.
 - b. Find the general solution.
 - c. Find the solution satisfying $y(0) = 2$, $y'(0) = -1$.
2. Find a differential equation whose general solution is $y = C_1 e^{2t} + C_2 e^{-5t}$.