1. Solve the initial value problem

\[ y'' - y = 0, \quad y(0) = 1, \quad y'(0) = 2, \]

and now solve

\[ y'' - y = 0, \quad y(0) = 0, \quad y'(0) = -1. \]

2. Solve the initial value problem

\[ y'' + y = 0, \quad y(0) = 1, \quad y'(0) = 2, \]

and now solve

\[ y'' + y = 0, \quad y(0) = -1, \quad y'(0) = 0. \]

3. In each of the following problems, you should give the general solution of the differential equation (i.e. do steps 1 & 2 as described in class)

(a) \[ y'' - 2y' + y = 0, \]
(b) \[ y'' - 3y' + y = 0, \]
(c) \[ y'' - y' + y = 0, \]
(d) \[ y' - 2y = 0, \]
(e) \[ y'' - 2y' = 0, \]
(f) \[ y''' - 2y'' = 0. \]