Homework 14

> **Instructions**: Complete each of the following on separate, stapled sheets of paper.

1. Solve the following IVPs via the method of Laplace transforms.

   (a) $y' + 6y = e^{4t}$; $y(0) = 2$

   (b) $y' + y = e^{-3t} \cos(2t)$; $y(0) = 0$

   (c) $y' - y = te^t \sin(t)$; $y(0) = 0$

   (d) $y'' + 5y' + 4y = 0$; $y(0) = 1$, $y'(0) = 0$

   (e) $y'' - 4y' = e^{3t} - 3e^{-t}$; $y(0) = 1$, $y'(0) = -1$

   (f) $y'' - 6y' + 9y = t$; $y(0) = 0$, $y'(0) = 1$

   (g) $y'' - 6y' + 13y = 0$; $y(0) = 0$, $y'(0) = -3$

   (h) $y'' - y' = e^t \cos(t)$; $y(0) = 0$, $y'(0) = 0$

   (i) $y'' + 9y = \cos(3t)$; $y(0) = 2$, $y'(0) = 5$

   (j) $y''' + 2y'' - y' - 2y = \sin(3t)$; $y(0) = 0$, $y'(0) = 0$, $y''(0) = 1$