MATH 2260 (Ordinary Differential Equations I) — Fall 2014
Homework #9

Due Date: Tuesday, December 2, in class or in marking box #59 by 5:00 PM. You must show all work to receive credit.

1. (25 points each) Solve the following equations using Laplace transforms. **NO credit** will be given for solutions that do not use Laplace transforms!

   (a) $D^2x - 2Dx = 4$, $x(0) = -1$, $x'(0) = 2$

   (b) $Dx - x = 2\sin(t)$, $x(0) = 0$

   (c) $D^2x + 2Dx + 2x = 25te^t$, $x(0) = x'(0) = 0$

   (d) $D^2x - x = \begin{cases} t & \text{if } t < 1 \\ 0 & \text{if } t \geq 1 \end{cases}$, $x(0) = x'(0) = 0$