Homework Assignment #12 Fall 2013 - MATH308

due Wednesday Oct 30 at the beginning of class

Topics covered: *step function and Laplace transform of discontinuous functions (corresponds to sections 6.3, 6.4 in the textbook)*

1. Find the Laplace transform of the function

$$f(t) = \begin{cases} 7 & t < 4, \\ -2t + 7 & 4 \le t < 8, \\ t^2 + 2t & 8 \le t. \end{cases}$$

2. Find the inverse Laplace transform of the function $\dfrac{e^{-2s}(2s+1)}{s^3 - 6s^2 + 13s}$.

3. Find the solution of the initial value problem $y'' + y = g(t)$; $y(0) = 0$, $y'(0) = 1$, where

$$g(t) = \begin{cases} \cos(4t), & 0 \le t < \pi \\ 0, & t \ge \pi. \end{cases}$$