MATH 54 FALL 2016: DISCUSSION 102/105 QUIZ#12

GSI: CHRISTOPHER EUR, DATE: 11/21/2016

STUDENT NAME: _____

Problem 1. Consider the linear differential operator $\ell(y) := y'' + 2y' + y$. Find the general solution to $\ell(y) = t \cos t$ as follows:
   (a) (2 points) Find $\ker \ell$.
   (b) (3 points) Find a particular solution to $\ell(y) = t \cos t$ (Hint: you might end up writing down a 4×4 matrix).
   (c) (1 point) Using the previous two parts, state what the general solution to $\ell(y) = t \cos t$ is.

Problem 2. (4 points) Find a particular solution to $y'' - 3y' + 2y = e^{2t}$.