

QUIZ #22, 11/8/07

MATH 54, FALL 2007

Show your work and justify your answers! Feel free to use both sides.

Name:

1. (5 pts) Consider the differential equation $y'' + y = x^2$. Note that $x^2 - 1$ is a solution.
 - (a) Find the general solution.
 - (b) Is the set of solutions a subspace of the linear space C^∞ (i.e. the space of infinitely differentiable functions)?
2. (3 pts) Find the general solution to $y'' + 6y' + 10y = 0$.
3. (2 pts) True/False: $y'' - 3yy' + y = 0$ is a linear differential equation. (That is, $L[y] = y'' - 3yy' + y$ is a linear transformation from C^∞ to C^∞ .) You needn't justify your answer.