

MATH 54 – QUIZ 13

PEYAM RYAN TABRIZIAN

Name: _____

Instructions: You have 20 minutes to take this quiz, for a total of 10 points. May your luck be fundamental (solution)!

1. (5 points) Find the general solution to the following differential equation:

$$\left(\frac{d^2}{dt^2} + 1\right) \left(\frac{d}{dt} + 2\right)^2 \left(\frac{d^2}{dt^2} + 4\frac{d}{dt} + 5\right) y = 0$$

(TURN PAGE)

Date: Friday, December 5, 2014.

2. (5 points) Let:

$$\mathbf{x}_1 = \begin{bmatrix} e^t \\ e^t \end{bmatrix}, \mathbf{x}_2 = \begin{bmatrix} e^{-t} \\ 3e^{-t} \end{bmatrix}$$

Determine if $\{\mathbf{x}_1, \mathbf{x}_2\}$ form a fundamental solution set of the system:

$$\mathbf{x}' = \begin{bmatrix} 2 & -1 \\ 3 & -2 \end{bmatrix} \mathbf{x}$$

What is the general solution of the above system?