Math 325: Differential Equations   Name:⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Quiz 3   *Oct. 15, 1997*

1. (4 pts.) Determine whether the following vector functions are linearly independent. (Justify your answer.)

$$\mathbf{X}_1 = \begin{bmatrix} 1 \\ t \\ t^2 \end{bmatrix}, \quad \mathbf{X}_2 = \begin{bmatrix} t \\ t^2 \\ t^3 \end{bmatrix}, \quad \mathbf{X}_3 = \begin{bmatrix} t^2 \\ t^3 \\ t^4 \end{bmatrix}$$

2. (6 pts.) Find the eigenvalues and corresponding eigenvectors of the following matrix.

$$\begin{bmatrix} 0 & 6 & 0 \\ 3 & 0 & 3 \\ 0 & -3 & 0 \end{bmatrix}$$