Name:_____   Math 260

Start Time:_____   Quiz 9 (25 min)

End Time:_____

Date:_____

1. (2 points) Are the vectors $\begin{bmatrix} 2 & 4 \\ -1 & 0 \end{bmatrix}, \begin{bmatrix} -3 & 6 \\ 2 & 0 \end{bmatrix}, \begin{bmatrix} -16 & 16 \\ 10 & 0 \end{bmatrix}$ linearly independent? Why or why not? If not, write the zero vector as a linear combination of these 3 vectors where not all coefficients are 0.

2. (2 points) Are the vectors $f(x) = e^x$ and $g(x) = x^2$ linearly independent as vectors in $F(-\infty, \infty)$? Why or why not?

3. (3 points) Show that the vectors $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$ form are both linearly independent and span $\mathbb{R}^3$. (Hint: Use a theorem)

4. (3 points) Find a basis for $\mathbb{R}^3$ containing the vector $\begin{bmatrix} 5 \\ 0 \\ -2 \end{bmatrix}$