Dawson College: Linear Algebra: 201-NYC-05 06

January 28, 2010

Last Name: _____

First Name: _____

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Quiz 1 (B)

Question 1. *(3 marks)* Determine if the following are linear equations if x_1, x_2, x_3 are variables and k is a constant:

(a) $x_1 - x_2 + x_3 = \sin k$

(b) $\pi x_1 - \sqrt{2}\, x_3 + \frac{1}{3} x_2 = 7^{\frac{1}{3}}$

(c) $x_1 - 4x_2 + x_1 x_3 = 7$

Question 2. *(7 marks)* Determine whether the following matrices are in row-echelon form, reduced row-echelon form, or neither. If the matrix is in row-echelon form, reduced row-echelon form solve the corresponding system of equations:

(a)
$$\begin{bmatrix} 1 & 0 & 0 & 2 & 0 & 3 \\ 0 & 1 & 0 & 5 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 2 \end{bmatrix}$$

(b)
$$\begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

(c) $\begin{bmatrix} 1 & 6 & -2 & 1 & -8 & 2 \\ 0 & 0 & 1 & 1 & -2 & 2 \\ 0 & 0 & 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & 0 & 0 & 2 & 3 \\ 0 & 1 & 0 & 5 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$