Dawson College: Linear Algebra: 201-105-DW January 26, 2009

Name: SOLUTIONS
Student ID: _____

Quiz 1

Question 1. *(1 mark each)*
Determine whether or not each of the following is a linear equations:

1. $5x_1 + 7x_2 + 6x_3 = \cos 19$ YES
2. $\sqrt{3}x + yz = 1$ NO

Question 2. *(4 marks)* Find the solution set for the following linear equation:

$$-4x_1 + 5x_2 - x_3 + \frac{4}{9}x_4 = 12$$

LET $x_1 = t$, $x_2 = s$, $x_4 = p$

THEN $-x_3 = 12 + 4x_1 - 5x_2 - \frac{4}{9}x_4$

$x_3 = -12 - 4x_1 + 5x_2 + \frac{4}{9}x_4$

$= -12 - 4t + 5s + \frac{4}{9}p$

$\therefore (x_1, x_2, x_3, x_4) = (t, s, 12 - 4t + 5s + \frac{4}{9}p, p)$ $t, s, p \in \mathbb{R}$

Question 3. *(4 marks)* Write the augmented matrix for the following system of linear equations:

$$\begin{array}{rrrrrcl} 3x_1 & -6x_2 & +7x_3 & & +x_5 & = & 0 \\ & \frac{1}{2}x_2 & & +x_4 & -10x_5 & = & 6 \\ 9x_1 & +4x_2 & & & +6x_5 & = & -3 \end{array}$$

$$\left[\begin{array}{cccccc} 3 & -6 & 7 & 0 & 1 & 0 \\ 0 & \frac{1}{2} & 0 & 1 & -10 & 6 \\ 9 & 4 & 0 & 0 & 6 & -3 \end{array}\right]$$