Quiz 2

Spring 2012

Math 0280 **Your name:** _____

1. [5 points] Are the vectors

$$\mathbf{v}_1 = \begin{bmatrix} 1 \\ -1 \\ 3 \end{bmatrix}, \quad \mathbf{v}_2 = \begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix}, \quad \text{and} \quad \mathbf{v}_3 = \begin{bmatrix} -1 \\ 2 \\ -3 \end{bmatrix}$$

LD? If they are LD, then represent $\mathbf{v}_1$ as a linear combination of $\mathbf{v}_2$ and $\mathbf{v}_3$.

2. [5 points] Using Gauss-Jordan elimination solve the system

$$\begin{aligned} 2x &+ y &= 3 \\ 4x &+ y &= 7 \\ 2x &+ 5y &= -1 \end{aligned}$$

3. [5 points] Let

$$A = \begin{bmatrix} 1 & -2 \\ 5 & 0 \end{bmatrix}, \quad B = \begin{bmatrix} -3 & 2 & 0 \\ 2 & -1 & 1 \end{bmatrix}, \quad C = \begin{bmatrix} 7 & 2 \\ -4 & 1 \end{bmatrix}.$$

Compute

a) [2 points] $A - 2C$.

b) [3 points] AB.

bonus problem [5 points extra] For what value(s) of k, if any, will the system

$$\begin{aligned} x &+ ky = 1 \\ kx &+ y = 1 \end{aligned}$$

have

a) [2 points] no solutions.

b) [1 point] a unique solution.

c) [2 points] infinitely many solutions.