

**Math 224**  
**Quiz 2**  
**Thursday, September 13, 2007**

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1. Reduce the matrix  $A = \begin{bmatrix} 2 & 1 & 4 \\ 1 & 3 & 2 \\ 3 & -1 & 6 \end{bmatrix}$  to row-echelon form.

2. Find all solutions of the given linear system, using the Gauss method with back substitution.

$$\begin{aligned}2x - y &= 8 \\6x - 5y &= 32\end{aligned}$$

3. Determine whether the vector  $\mathbf{b} = \begin{bmatrix} 3 \\ 5 \\ 3 \end{bmatrix}$  is in the span of the vectors  $\mathbf{v}_1 = \begin{bmatrix} 0 \\ 2 \\ 4 \end{bmatrix}$ ,  $\mathbf{v}_2 = \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix}$ ,  $\mathbf{v}_3 = \begin{bmatrix} -3 \\ -1 \\ 5 \end{bmatrix}$ .

4. Let  $A^{-1} = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 3 & 1 \\ 4 & 1 & 2 \end{bmatrix}$ . If possible, find a matrix  $C$  such that  $AC = \begin{bmatrix} 1 & 2 \\ 0 & 1 \\ 4 & 1 \end{bmatrix}$ .