Math 415 ADG
Quiz # 1

Name: Solutions

January 31, 2014 No electronic devices or interpersonal communication allowed. Show work to get credit.

Find the reduced echelon form for the following matrix:

$$\begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & -2 & 2 & -6 \\ 3 & 7 & 14 & -1 \end{bmatrix} \xrightarrow[R_2 \to -\frac{1}{2}R_2]{R_3 \to R_3 - 3R_1} \begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & 1 & -1 & 3 \\ 0 & -2 & 2 & -22 \end{bmatrix} \xrightarrow[R_1 \to R_1 - 3R_2]{R_3 \to R_3 + 2R_2} \begin{bmatrix} 1 & 0 & 7 & -2 \\ 0 & 1 & -1 & 3 \\ 0 & 0 & 0 & -16 \end{bmatrix}$$

$$\Big\downarrow R_3 \to -\frac{1}{16}R_3$$

$$\begin{bmatrix} 1 & 0 & 7 & -2 \\ 0 & 1 & -1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\Big\downarrow \begin{array}{l} R_1 \to R_1 + 2R_3 \\ R_2 \to R_2 - 3R_3 \end{array}$$

$$\begin{bmatrix} 1 & 0 & 7 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$