

**Math 415 ADG****Name:** *Solution***Quiz # 3**

February 14, 2014

No notes, electronic devices, or interpersonal communication allowed. Show work to get credit. Use the methods from this class.

Find the inverse of  $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 3 \\ -2 & 0 & 1 \end{bmatrix}$ , if it exists.

$$\left[ \begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 3 & 0 & 1 & 0 \\ -2 & 0 & 1 & 0 & 0 & 1 \end{array} \right]$$

$$\xrightarrow{R_3 := R_3 + 2R_1} \left[ \begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 3 & 0 & 1 & 0 \\ 0 & 0 & 1 & 2 & 0 & 1 \end{array} \right]$$

$$\xrightarrow{R_2 := R_2 - 3R_3} \left[ \begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & -6 & 1 & -3 \\ 0 & 0 & 1 & 2 & 0 & 1 \end{array} \right]$$

$$\therefore \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 3 \\ -2 & 0 & 1 \end{bmatrix}^{-1} = \begin{bmatrix} 1 & 0 & 0 \\ -6 & 1 & -3 \\ 2 & 0 & 1 \end{bmatrix}$$