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Math 2150, Fall 2005, Quiz 6
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Compute the following inverses:

(a) $\begin{bmatrix} 1 & 0 & 3 \\ 0 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}^{-1}$ (b) $\begin{bmatrix} 3 & 0 & 4 \\ 2 & 2 & 3 \\ 0 & 1 & 0 \end{bmatrix}^{-1}$

(a) $\begin{bmatrix} 1 & 0 & -3 \\ 0 & 1/2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

(b) $\left[\begin{array}{ccc|ccc} 3 & 0 & 4 & 1 & 0 & 0 \\ 2 & 2 & 3 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right] \xrightarrow{-R_2} \left[\begin{array}{ccc|ccc} 1 & -2 & 1 & 1 & -1 & 0 \\ 2 & 2 & 3 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 1 \end{array}\right] \xrightarrow{-2R_1}$

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

$\left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 3 & -4 & 8 \\ 0 & 1 & 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & -2 & +3 & -6 \end{array}\right]$

$$A^{-1} = \begin{bmatrix} 3 & -4 & 8 \\ 0 & 0 & 1 \\ -2 & 3 & -6 \end{bmatrix}$$