SOLUTION TO 1.2.44

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Proof. I will apply elementary row operations to A to get I:

$$\begin{bmatrix} 1 & d \\ c & b \end{bmatrix} \xrightarrow{R_2 - cR_1} \begin{bmatrix} 1 & d \\ 0 & b - cd \end{bmatrix} \xrightarrow{\left(\frac{1}{b-cd}\right)R_2} \begin{bmatrix} 1 & d \\ 0 & 1 \end{bmatrix} \xrightarrow{R_1 - dR_2} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

The second step is okay because $b - cd \neq 0$. Because I can apply elementary row operations to A to get I, A and I are row equivalent. $\square$