Name: Solution

1. Use determinants to decide whether the given matrix is invertible.

$$A = \begin{bmatrix} 2 & 5 & 5 \\ -1 & -1 & 0 \\ 2 & 4 & 3 \end{bmatrix}$$

$$\det A = \begin{vmatrix} 2 & 5 & 5 \\ -1 & -1 & 0 \\ 2 & 4 & 3 \end{vmatrix}$$

$$= 5\begin{vmatrix} -1 & -1 \\ 2 & 4 \end{vmatrix} - 0 + 3\begin{vmatrix} 2 & 5 \\ -1 & -1 \end{vmatrix}$$

$$= 5(-4+2) + 3(-2+5)$$

$$= -10 + 9$$

$$= -1.$$

A is invertible because $\det A \neq 0$.