Name: _____

**Directions:** Show all work. No credit for answers without work.

1. **[2 parts, 3 points each]** Find the inverses of the following matrices, if they exist. Except for part (a), use the row-reduction algorithm.

   (a) $\begin{bmatrix} 2 & -5 \\ 3 & -1 \end{bmatrix}$

   (b) $\begin{bmatrix} -2 & 4 & -3 \\ -8 & 17 & -14 \\ 3 & -6 & 5 \end{bmatrix}$

2. **[2 points]** Prove that if $A$ is row-equivalent to an invertible matrix $B$, then $A$ is also invertible.

3. **[2 parts, 1 point each]** Elementary matrices.

   (a) Give the elementary matrix $E$ that, in a system with 4 equations, corresponds to the elementary row operation $R3 \leftarrow R3 + (2)(R2)$.

   (b) Find the matrix $E^{-1}$.