

1. A is a 3×3 matrix and \vec{b} is an unknown vector in \mathbb{R}^3 . The equation $A\vec{x} = \vec{b}$ has at least 2 solutions,

$$\vec{x} = \begin{pmatrix} 4 \\ 8 \\ -3 \end{pmatrix} \quad \text{and} \quad \vec{x} = \begin{pmatrix} -2 \\ 1 \\ 1 \end{pmatrix}.$$

Find all possibilities for the reduced row echelon form of A .