

Let

$$A = \begin{bmatrix} 4 & 8 \\ 6 & 15 \\ 1 & 1 \end{bmatrix} \quad \text{and} \quad \vec{b} = \begin{bmatrix} -20 \\ -36 \\ -3 \end{bmatrix}.$$

A linear transformation $T : \mathbb{R}^2 \rightarrow \mathbb{R}^3$ is defined by $T(x) = Ax$. Find an \vec{x} in \mathbb{R}^2 whose image under T is \vec{b} .

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$$\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} \boxed{-1} \\ \boxed{-2} \end{bmatrix}$$