Let

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

Find a basis for the image of A (or, equivalently, for the linear transformation $T(x) = Ax$).

A basis for the image of A is $\left\{ \begin{bmatrix} \ \\ \ \\ \ \\ \ \end{bmatrix}, \begin{bmatrix} \ \\ \ \\ \ \\ \ \end{bmatrix} \right\}$.

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