

Step-1

Suppose the 9 by 12 system $Ax = b$ is solvable for every b .

We have to find $\mathbf{C}(A)$.

Step-2

Column $A = \{b \mid b = Ax \text{ for some } x \text{ in } \mathbf{R}^n\}$, where A is m by n matrix

The column space of an $m \times n$ matrix A is the set of all linear combinations of columns of A and the column space of an $m \times n$ matrix A is a subspace of \mathbf{R}^m

Since given system is 9 by 12 system and $Ax = b$ is solvable for every b .

And also the column space of the 9 by 12 matrix A is the subspace of \mathbf{R}^9

Therefore $\boxed{\mathbf{C}(A) = \mathbf{R}^9}$