

Linear Algebra – Check your understanding

- Is it possible for a linear system of equations to have exactly 10 solutions? Why or why not?
- Is it possible for a linear system of equations to have no solution at all? If so, give an example. If not, explain why.
- Give an example of a 3 by 3 matrix whose rank is 1. What is the dimension of the null space of the matrix you just found? Explain.
- Give an example of three 3-dimensional vectors that do not span \mathbb{R}^3 . Choose the vectors so that no two vectors are proportional to one another.
- Give an example of three 3-dimensional vectors **with non-zero entries** that span \mathbb{R}^3 .