Assignment 15

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***Abstract*—This document solves a problem of Linear Algebra.**

Download all latex-tikz codes from

https://github.com/Matish007/Matrix−Theory−EE5609−/tree/master/Assignment_15

1 Problem

The row space of a 20×50 matrix $\mathbf{A}$ has dimension 13.What is the dimension of the space of solution $\mathbf{Ax} = 0$?

1) 7
2) 13
3) 33
4) 37

2 SOLUTION

Options	Explanation
7 Given Rank Nullity Theorem	 A:$\mathbf{R^{50}} \rightarrow \mathbf{R^{20}}$ is a linear transformation *dim*(row space(**A**))=*rank*(**A**)=13 **A**:$\mathbf{R^{50}} \rightarrow \mathbf{R^{20}}$ is a linear transformation then, *rank*(**A**)+*nullity*(**A**)=50 13 + *nullity*(**A**)=50 *nullity*(**A**)=37 *dim*(space of solution(**Ax** = 0))=*nullity*(**A**)=37 Hence,incorrect
13	From above,it is obvious that it is incorrect
33	It is also incorrect.
37	From above it is correct

TABLE 1: Finding Correct Option