Step-1

If A is an m by n matrix, using row operations, we can reduce A to r non zero rows and

m â€“ r zero rows. Then

1. $C(A)=$ Column space of A; dimension r

2. $N(A)$ = null space of A; dimension n â€“ r

3. $C(A^T)$ = row space of A; dimension r

4. $N(A^T)$ = left null space of A; dimension m â€“ r

Step-2

If A is an n by $n-1$ matrix and rank is $n-2$

We know that $\text{rank } A + \dim N(A) = \text{Number of columns}$

$n-2+\dim(N(A))=n-1$

$\dim(N(A))=1$

Therefore, the dimension of null space = 1