Step-1

Consider the statement,

If m = n, then the row space of A equals the column space and if m < n, then the null space has a larger dimension than the column space

Need to determine whether the statement is true or false.

The statement is false.

For example:

$$A = \begin{bmatrix} 3 & 4 \\ 6 & 8 \end{bmatrix}.$$

Here, the number of rows equal to the number of columns (m = n = 2), but the row space of A contains multiples of (3,4) while the column space of A contains multiples of (1,2).

If m < n, the left null space has smaller dimension m - r and r is the rank of the matrix A

Thus, the row space of *A* is not equal to the column space.

Hence, the statement is false.