

## Lecture 15: Dimension

### 1 Question 1: True or false?

If  $A$  is an  $5 \times 4$  matrix, and the rank of  $A$  is 3, then the kernel has dimension 1.

### 2 Question 2: True or false?

If  $A$  is an invertible  $4 \times 4$  matrix, then the dimension of the kernel is 0.

### 3 Question 3: True or false?

If  $A, B$  are  $3 \times 3$  matrices and  $AB$  has a kernel of dimension 2 then  $A$  has a kernel of dimension at least 1.

### 4 Question 4: True or false?

If  $A^2$  is the zero matrix then the image of  $A$  is contained in the kernel of  $A$ .