

Math 225 Quiz 3

Don't forget to write down clearly your **Name**:

and **ID number**:

1. True or False (5 points) Mark "T" (True) or "F" (False) in front of each statement.

_____ An elementary matrix is always invertible.

_____ The transpose of an elementary matrix is also elementary.

_____ The rank of a matrix equals the maximal number of linearly independent rows.

_____ Any square matrix can be written as a product of elementary matrices.

_____ Elementary column operations do not necessarily preserve rank.

2. Invertible maps (5 points). Let $T : V \longrightarrow W$ and $S : W \longrightarrow V$ be linear maps, and suppose $\dim(V) = 5$ and $\dim(W) = 4$. Can $S \circ T : V \longrightarrow V$ be an invertible map? Justify your answer.