

Math 225 Quiz 3

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

and **Net ID**:

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

____ The transpose of an elementary matrix is also elementary.

____ The row span and column span of a matrix have the same dimension.

____ The determinant $\det : M_n(\mathbb{F}) \longrightarrow \mathbb{F}$ is a linear map.

____ If A is a square matrix with coefficients in \mathbb{R} , $\det(AA^t) \geq 0$.

____ If $A \in M_3(\mathbb{F})$ has $\det(A) = 0$, then the row span of A may be 3-dimensional.

2. Compute determinant (5 points). Compute the determinant of the following matrix A :

$$A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 3 & 9 \end{pmatrix},$$

and determine whether this matrix is invertible or not.