

Math 2135 Fall 2025 - Review for Midterm 1

1. Systems of linear equations.

- (1) coefficient and augmented matrix
- (2) solving a linear system by row reduction, pivot columns, free variables, give solution in parametrized vector form
- (3) consistency and number of solutions of systems
- (4) solutions of homogenous systems $Ax = 0$ and inhomogenous systems $Ax = b$, nullspace of A

2. Matrices.

- (1) elementary row operations, (reduced) row echelon form, pivot columns
- (2) multiplication of matrix by column vector
- (3) matrix product and composition of linear maps

3. Vectors.

- (1) linear combinations, span of vectors
- (2) linear independent vectors

4. Linear Transformations.

- (1) standard matrix of a linear map
- (2) injective, surjective, bijective linear transformations