

Math310: Exam 1 Topics
Spring 2013

1. How to solve systems of linear equations

- Gaussian elimination (Gauss-Jordan reduction)
- Cramer's rule
- If $Ax = b$ then $x = A^{-1}b$

2. How to determine the number of solutions a system has by analyzing REF of its augmented matrix

3. How to perform algebraic operations with matrices

addition, scalar multiplication, matrix multiplication, transposition

4. How to find A^{-1}

- $(A|I) \rightarrow (I|A^{-1})$
- $A^{-1} = \frac{1}{\det A} \text{Adj } A$

5. How to find $\det A$

- cofactor expansion
- Gaussian elimination

6. Properties of determinants

- $\det AB = \det A \det B$
- A is invertible if and only if $\det A \neq 0$
- other properties

7. How to find LU -factorization