Core Topics

Algebra I 18.701

- Groups \( \mathbb{Z} \), \( \mathbb{R}^n \), \( \text{GL}(N) \)
- Key examples: \( S_n \), \( D_n \), \( A_n \)
- Subgroups
- Cyclic groups
- Homomorphisms, Isomorphisms
- Cosets
- Quotient groups, Product groups
- Vector spaces, Dimension formula
- Linear operators, Jordan form
- Simple groups, Group actions, Stabilizers
- Orbit, Stabilizer, Theorem, Orbits
- Conjugation
- Normal subgroups, The class
- Center of a group, One-parameter equation
- Normalizer
- Motions of \( \mathbb{R}^n \), Pairs, groups
- Orthogonal group, Special unitary
- One parameter groups, Group \( SO_3 \)
- Sylow theorems