Linear algebra: short syllabus

Determinant, its features and calculations.

Matrix product and its features. Inverse matrix and its calculation.

The necessary and sufficient condition for a system of n linear homogeneous equations with n unknown variables $Ax = 0$, $x \in \mathbf{R}^n$ to have a unique solution (det $A \neq 0$).

The necessary and sufficient condition for a system of n linear homogeneous equations with n unknown variables $Ax = 0$, $x \in \mathbf{R}^n$ to have a nonzero solution (det $A = 0$).

The necessary and sufficient condition for a system of n linear homogeneous equations with n unknown variables $Ax = 0$, $x \in \mathbf{R}^n$ to have infinite number of solutions (det $A = 0$).

Cramer rule.

Linear transformation, eigenvector, eigenvalue, characteristical polynomial.