# Algebra-2

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1. Quadratic form.
2. Quadratic forms; matrices of quadratic forms
3. Quadratic forms; their rank and nonsingular quadratic forms.
4. Images of linearly dependent systems on isomorphism.
5. Inverce matrix. Definition and examples..
6. Vector spaces. Definitions and examples.
7. Fundamental theorem on quadratic forms
8. Finite dimensional spaces.
9. Finite dimensional spaces as a vector row-space..
10. Sistem of linear equation.
11. Law of inertia.
12. Linear dependent sets of vectors.
13. Linear transformations of quadratic forms
14. Linear transformations on vector spaces.
15. Linear spaces. Definition and examples.
16. Linear subspaces.
17. Bases of a vector space.
18. Bases; the theorem about isomorphic images of bases..
19. Decomposable quadratic forms.
20. Dementional of a vector space.
21. Canonical quadratic forms.
22. Change of basis of a vector spaces.
23. Characteristic polynomials and characteristic roots of matrices.

24. Complex numbers. Triqonometric form of complex numbers.
25. Matrices of linear transformations
26. Nonsingular linear transformations.
27. Normal quadratic forms; reducing a quadratic form with complex coefficients to normal form.
28. Normal quadratic forms; reducing a quadratic form with real coefficients to normal form.
29. Positive definite forms.
30. Positive, negative indices, signature; theorem about them.
31. Principal minors of quadratic forms; theorem about them
32. Prove that similar matrices have the same characteristic roots.
33. Rank of matrix. Definition and examples.
34. Reducing to canonical form.
35. Relationships between bases.
36. Relationships between matrices of a linear transformation in different bases.
37. The range of values of a linear transformation.
38. Transformation of vector coordinates.
39. Ortogonal linear map. Definition and examples.
40. Operations on linear transformations