Throughout we let $A = (a_{ij})$ denote an $n \times m$ matrix, and $B = (b_{ij})$ denote a $r \times k$ matrix. We let $\mathbb{F}$ denote a field and $V$ and $W$ are $\mathbb{F}$-vector spaces. Let $T : V \to W$ be a linear transformation.

1. A system of linear equations is **consistent** if

2. A system of linear equations is **inconsistent** if

3. A system of linear equations is said to be **homogeneous** if

4. The **order** of a matrix is

5. The set of all $n \times m$ matrices is denoted by

6. The matrix is a **square** matrix if

7. The $n \times n$ **identity** matrix is defined as $I_n = (m_{ij})$ where

8. The matrix $A$ is said to be in **row echelon form** if

9. The matrix $A$ is said to be in **reduced echelon form** if

10. The **transpose** of the matrix $A$ is the matrix

11. The **trace** of the matrix $A$ is

12. The matrix $A$ is said to be **symmetric** if

13. The matrix $A$ is said to be **skew-symmetric** if

14. The matrix $A$ is said to be **orthogonal** if

15. The matrix $A$ is said to be **diagonal** if

16. The matrix $A$ is said to be **upper triangular** if

17. The matrix $A$ is said to be **lower triangular** if

18. The matrix $A$ is said to be **triangular** if

19. The matrix $A$ is said to have a **LU-factorization** if
20. The matrix $A$ is said to be invertible if

21. The inverse of the (square) matrix $A$ is

22. The matrices $A$ and $B$ are said to be similar if

23. The matrices $A$ and $B$ are said to be row equivalent if

24. The matrix $A$ is said to be diagonalizable if

25. The determinant of the (square) matrix $A$ is defined as the quantity

26. A (square) matrix $A$ is said to be idempotent if

27. A group is a

28. A field is a

29. A scalar is

30. An $F$-vector space is a

31. A subspace of $V$ is

32. Let $S \subseteq V$ be a set of vectors. The span of $S$ (i.e. the subspace generated by $S$) is

33. A set of vectors, say $S$, is said to be linearly dependent if

34. A set of vectors, say $S$, is said to be linearly independent if

35. A set of vectors, say $S$, is said to be a basis if

36. The dimension of a subspace of $V$ is

37. The row space of a matrix is

38. The column space of a matrix is

39. The nul space of a matrix is

40. The rank of the matrix $A$ is denoted by rank($A$) and is

41. The nullity of a matrix $A$ is denoted by nullity($A$) and is
42. The notation \( f : C \to D \) is read as

43. In the notation \( f : C \to D \) the letter \( f \) is called the

44. In the notation \( f : C \to D \) the set \( C \) is called the

45. In the notation \( f : C \to D \) the set \( D \) is called the

46. A function \( T : V \to W \) is called a **linear transformation** if

47. A function \( T : V \to W \) is called a **linear isomorphism** if

48. Let \( T : V \to W \) be a linear transformation and \( v \in V \). The **image** of \( v \) is

49. The **range** of \( T \) is

50. Let \( T : V \to W \) be a linear transformation and \( w \in W \). The **preimage** of \( w \) is

51. The kernel of the linear transformation \( T : V \to W \) is

52. The function \( f : C \to D \) is said to be **one-to-one** (aka *injective*) if

53. The function \( f : C \to D \) is said to be **onto** (aka *surjective*) if

54. The function \( f : C \to D \) is called a **bijection** if

55. The function \( f : C \to D \) is called a **permutation** if

56. The **(standard) matrix representation** of the linear transformation \( T : \mathbb{R}^n \to \mathbb{R}^m \) is

57. An **eigenvalue** for the matrix \( A \) is

58. An **eigenvector** for the matrix \( A \) is

59. The **characteristic polynomial** of the matrix \( A \) is

60. The **eigenspace** of \( A \) corresponding to the eigenvalue \( \lambda \) is denoted by \( E_\lambda \) and is