## **Ordinary differential equations-2**

- 1. Substitution of independent variable in the Linear differential equation of the High order.
- 2. Linear differential equations.
- 3. Properties of the Linear equations.
- 4. Linearly dependent and independent systems of functions..
- 5. Wronsky determinant and its properties.
- 6. Fundamental system of solutions.
- 7. Representation of the General solution with the fundamental system of solutions.
- 8. Reconstruction of the Differential equation in accordance with the known Fundamental system.
- 9. Ostrogradsky-Liouville formula for the Linear equations of the High order.
- 10. Applications of the Ostrogradsky-Liouville formula.
- 11. Non-homogeneous Linear equations of the High order.
- 12.Metod of variation of the constants for the Linear equations of the High order.
- 13.Linear homogeneous differential equations of the High order with the constant coeffitions.
- 14. Characteristic equation. Characteristic numbers.
- 15.Linear homogeneous differential equations with the constant coefficients of the high order.Case of the different real roots.
- 16.Linear homogeneous differential equations with the constant coefficients of the High order.Case of the repeating roots.
- 17.Linear homogeneous differential equations with the constant coefficients. Case of the complex roots.
- 18. Linear non-homogeneous differential equations with the constant coefficients.
- 19. Euler equation.
- 20. System of the Linear dihherential equations.
- 21. Wronsky determinant of the system of Linear differential equations.
- 22. Ostrogradsky-Liouville formula.
- 23. Theorem on solution of the Linear system of differential equations.
- 24. Some knowns from the Matrix Theory..
- 25.Fundamental Matrix of solutions of the Linear system of differential equations with the constant coefficients.
- 26. Theorem on Fundamental Matrix of the system of differential equations.

- 27. Matrisiant  $e^{At}$ .
- 28. Construction of the  $e^{At}$ .
- 29. Systems of the linear differential equations with the constant coefficients.
- 30. Characteristic polynomial, Characteristic roots..
- 31. System of the Linear differential equation..
- 32. Normal system of the differential equations with the parameter at the right-hand side.
- 33. Continuoisly dependence of solution of parameter..
- 34. Stability of the trivial solution of the system with the constant coeffitions. Y
- 35.Lemma on stability of the system with the constant coefficients.
- 36. Equlibrum of the Linear system with the constant coefficients.
- 37. Gourvits polinomial.
- 38. Construction of the Gouvits polynomial.
- 39. Gourvits Matrix.
- 40.Method of the Rauss-Gourvits.
- 41. Stability. Lyapunov's functions Method.