

Analysis, 2018/19, sem.1, 60h (L), 60h (E)

Lectures

- 1.(2.10) Logic and Techniques of Proof.
- 2.(9.10) Induction and Natural Numbers.
- 3.(10.10) Real Numbers.
- 4.(16.10) Functions: Idea, Definition, Graph. New Functions from Old. Families of Functions.
- 5.(17.10) Trigonometry for Calculus.
- 6.(23.10) Inverse Functions. Inverse Trigonometric Functions.
- 7.(24.10) Limits of Functions. Sandwich Theorem.
- 8.(30.10) Limits: one-sided, trigonometric.
- 9.(31.10) Limits: exponential, improper.
- 10.(6.11) Continuity of Functions. Asymptotes.
- 11.(7.11) Derivative of Function.
- 12.(13.11) Differential. Derivatives of Composite Functions. Derivative of Inverse Function.
- 13.(14.11) Derivatives of Log and Exp Functions. Implicit Differentiation.
- 14.(20.11) The Mean Value theorem and Its Applications. Critical Points. Derivative Test for Increasing/Decreasing Functions.
- 15.(21.11) Max/min Problems. Story problems.
- 16.(27.11) Concavity. Related Rates Problems.
- 17.(28.11) L'Hospital's Rule to Evaluate Certain Indefinite Forms.
- 18.(4.12) Indefinite Integral.
- 19.(5.12) Techniques of Integration: Inverse Substitution and Integration by Parts.
- 20.(11.12) Techniques of Integration: Partial Fractions.
- 21.(12.12) Techniques of Integration: Trigonometric Functions.
- 22.(18.12) Definite Integral.
- 23.(19.12) Fundamental Theorem of Calculus.
- 24.(8.01) Applications to Geometry: Area, Volume, and Arc Length.
- 25.(9.01) Sequences and Limits.
- 26.(15.01) Number Series.
- 27.(16.01) Number Series.
- 28.(22.01) Power Series.
- 29.(23.01) Power Series.

Exercises

- 1.(2.10) Sets, Quantifiers and Cartesian Product.
- 2.(9.10) Induction and Natural Numbers.
- 3.(10.10) Real Numbers.
- 4.(16.10) Functions.
- 5.(17.10) Families of Functions.
- 6.(23.10) Trigonometry for Calculus.
- 7.(24.10) Inverse Functions. Inverse Trigonometric Functions.
- 8.(30.10) Limits of Functions. Sandwich Theorem.
- 9.(31.10) Limits: one-sided, trigonometric, exponential, improper.
- 10.(6.11) Continuity of Functions. Asymptotes.
- 11.(7.11) Derivative of Function.
- 12(13.11) Differential. Derivatives of Composite Functions.
- 13.(14.11) TEST
- 14.(20.11) Critical Points. Derivative Test for Increasing/Decreasing Functions.
- 15.(21.11) Max/min Problems.
- 16.(27.11) Max/min Problems. Concavity. Related Rates Problems.
- 17.(28.11) L'Hospital's Rule to Evaluate Certain Indefinite Forms. TEST (derivatives) 40 min.
- 18.(4.12) Indefinite Integral.
- 19.(5.12) Techniques of Integration: Inverse Substitution and Integration by Parts.
- 20.(11.12) TEST
- 21.(12.12) Techniques of Integration: Partial Fractions.
- 22.(18.12) Definite Integral. The Fundamental Theorem of Calculus.
- 23.(19.12) Applications to Geometry: Area, Volume, and Arc Length.
- 24.(8.01) Applications to Science: Average Values, Work, and Probability.
- 25.(9.01) Sequences and Limits.
- 26.(15.01) Number Series.
- 27.(16.01) Number Series.
- 28.(22.01) TEST
- 29.(23.01)