GATE DA
CALCULUS

About Me

VENKATESH E

🎓 Master's in AI from IIT Hyderabad

💼 MLE-3 at PayPal (ex-Qualcomm)

🏅 3+ years of Machine Learning Engineering experience

📚 Taught GATE Data Science on RBR Sir's platform (Gate DA - 2024)

📝 Published research papers in AAAI 2021 & ACL 2023

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📘 GATE Official Syllabus Breakdown

✅ Functions of a single variable
✅ Limit, continuity, and differentiability
✅ Taylor series
✅ Maxima and minima
✅ Optimization involving a single variable

📝 Calculus and Optimization Chapter Breakdown

1️⃣ Foundations of Functions (8 hours)

Covers: Functions of a single variable, domain and range, types of functions (polynomial, rational, trigonometric, exponential, logarithmic), graphical understanding.

2️⃣ Limits and Continuity (8 hours)

Covers: Intuitive understanding of limits, limit laws, one-sided limits, continuity, intermediate value theorem, removable and essential discontinuities.

3️⃣ Differentiability and Derivatives (10 hours)

Covers: Definition of derivative, geometric interpretation, basic differentiation rules, product/quotient/chain rule, higher-order derivatives, Leibniz notation.

4️⃣ Taylor Series and Expansions (8 hours)

Covers: Intuition of series expansion, Taylor and Maclaurin series, approximating functions using series, error analysis.

5️⃣ Maxima, Minima, and Critical Points (8 hours)

Covers: First and second derivative tests, concavity, inflection points, absolute vs local extrema, real-world applications.

6️⃣ Single-Variable Optimization (7 hours)

Covers: Optimization problems, setup and formulation, solving using derivatives, boundary analysis, rate of change applications.

7️⃣ Problem Solving & GATE PYQs (6 hours)

Covers: Basic, Intermediate, and Advanced GATE Problems