MIT mathematics courses - notes

Aheer srabon

1   18.100B - Analysis I

Principles of mathematical analysis, 3rd edition - by Walter Rudin.

Topics,

1. Ordered sets and fields   Section 1.1 to 31
2. Countability, Euclidean spaces   Section 1.32 to 38 and 2.1 to 17
3. Metric spaces   Section 2.15 to 28
4. Relative topology, compact sets   Section 2.29 to 40
5. Compact sets   Section 2.36 to 44
6. Connected sets, convergence   Section 2.45 to 47 and 3.1 to 7
7. Sequential compactness   Notes (PDF)
8. Completeness
9. Construction of the real numbers
10. Series
11. Series (cont.)
12. Continuity
13. $l \wedge p$ spaces
14. Continuity and compactness, connectedness
15. Discontinuities, monotone functions
16. Differentiability, mean value theorem
17. L'Hospital's rule, Taylor's theorem
18. Riemann integral
19. Riemann integrability and continuity almost everywhere
20. Stieltjes integral, fundamental theorem of calculus
21. Sequences and series of functions
22. Equicontinuity
23. Weierstrass function, Devil's staircase