

MIT mathematics courses - notes

Aheer srabon

1 18.100B - Analysis I

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

Topics,

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| 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 | Section 3.8 to 20 |
| 9. Construction of the real numbers | Notes (PDF) |
| 10. Series | Section 3.20 to 37 |
| 11. Series (cont.) | Section 3.38 to 55 |
| 12. Continuity | Section 4.1 to 12 |
| 13. $l \wedge p$ spaces | Notes (PDF) |
| 14. Continuity and compactness, connectedness | Section 4.13 to 24 |
| 15. Discontinuities, monotone functions | Section 4.25-34 |
| 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 | |