# Topological and Smooth Manifolds

December 3, 2023

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| Appendices                         |   |  |  |  |  |
|------------------------------------|---|--|--|--|--|
| A Other Chapters                   |   |  |  |  |  |
| Set Theory                         | 9. Categories   |  |  |  |  |
| 1. Sets                            | 10. Constructions With Categories                                   |  |  |  |  |
| 2. Constructions With Sets         | 11. Kan Extensions  |  |  |  |  |
| 3. Pointed Sets                    | Bicategories  |  |  |  |  |
| 4. Tensor Products of Pointed Sets | <ul><li>12. Bicategories</li><li>13. Internal Adjunctions</li></ul> |  |  |  |  |
| 5. Indexed and Fibred Sets         | Internal Category Theory  |  |  |  |  |
| 6. Relations                       | 14. Internal Categories   |  |  |  |  |
| 7. Spans                           | Cyclic Stuff  |  |  |  |  |
| 8. Posets                          | <ul><li>15. The Cycle Category</li><li>Cubical Stuff</li></ul>      |  |  |  |  |
| Category Theory                    | 16. The Cube Category   |  |  |  |  |

#### Globular Stuff

17. The Globe Category

### Cellular Stuff

18. The Cell Category

### Monoids

- 19. Monoids
- 20. Constructions With Monoids

## **Monoids With Zero**

- 21. Monoids With Zero
- 22. Constructions With Monoids With Zero

### Groups

- 23. Groups
- 24. Constructions With Groups

## Hyper Algebra

- 25. Hypermonoids
- 26. Hypergroups
- 27. Hypersemirings and Hyperrings
- 28. Quantales

# **Near-Rings**

- 29. Near-Semirings
- 30. Near-Rings

# **Real Analysis**

- 31. Real Analysis in One Variable
- 32. Real Analysis in Several Variables

## **Measure Theory**

- 33. Measurable Spaces
- 34. Measures and Integration

## **Probability Theory**

34. Probability Theory

## **Stochastic Analysis**

- 35. Stochastic Processes, Martingales, and Brownian Motion
- 36. Itô Calculus
- 37. Stochastic Differential Equations

# **Differential Geometry**

38. Topological and Smooth Manifolds

#### **Schemes**

39. Schemes