

Bibliography

These are books I will use in preparation for teaching, or have found useful or interesting. Only the first is even remotely recommended for the course. I think you should not waste money on any of the others unless and until you teach calculus. The list provides sources of additional information for the curious, with library call numbers where I could find them. It also gives what supplements are available, and the names of a few books that I have enjoyed and think you might also.

1. Speigel, Murray R., Mathematical Handbook of Formulas and Tables, Schaum's Outline Series, New York: McGraw Hill, 1968. If you are planning to study any of the sciences, you will need some such book as this, as it is not possible to memorize every formula you might need. This isn't the best, only the cheapest, but it has almost everything I needed in four years of graduate Mathematics. If the formula you need isn't in here, go to the library or the internet.

2. Hughes-Hallett, et. al., Calculus Fourth Edition. New York: John Wiley, 2005. The text for the prerequisite courses.

Supplementary texts:

3. Apostol, Tom., Calculus 2 vol. New York: Blaisdell, 1961. A careful and complete calculus theory book. QA 300 A57

4. Ayers, Frank and Mendelson, Eliot, Theory and Problems of Differential and Integral Calculus. Schaum's Outline Series. New York: McGraw Hill, 1990. Lots of problems, many worked out in detail.: Pretty thin on theory. Not in the Library.

5. Research and Educational Associates. The Calculus Problem Solver. Piscataway, NJ: REA, 1974. Even thinner on theory, lots more problems, many with the algebra and arithmetic done in complete detail. Like Schaum's only less so, and starts out with a discussion of why this stuff is so difficult which I strongly recommend you ignore because I think it is misleading. Not in the library. I have both #4 and #5. Even if you are very rich, I recommend that you come and look at my copy before you lay out money for (and waste shelf space on) either of these things. They are not needed - if you manage to do all the problems in the text, I can supply lots more. However, you should know that they exist.

Further Reading:

6. Boyer, Carl B., The History of The Calculus and Its Conceptual Development. New York: Dover, 1949. A standard work, but pretty heavy going. QA 303 B87

7. Eves, Howard, An Introduction to the History of Mathematics. 5th ed., Philadelphia, PA: CBS College Pub., Easier going. QA21 E8 11988

8. Bell, Eric Temple, Men Of Mathematics New York: Simon & Schuster, 1936. Fun. Bell is an opinionated old curmudgeon with a flair for words.

His biographies of some of Mathematics' holiest saints are fascinating, even if their accuracy is a bit suspect. QA28 B4 1986.

9. White, Michael, Isaac Newton: The Last Sorcerer. Reading, MA: Addison-Wesley, 1997. The interesting tale of the guy who started it all; he comes across as lots weirder than most people. QC16.N7 W55 1997.

10. Polya, George, Induction and Analogy in Mathematics. 2 vol. Princeton, NJ: University Press, 1954. A first rate mathematician takes on problem solving. I cribbed a lot from here for the section on the first day on how to do homework problems. QA9P57.

11. Wigner, Eugene P., "The Unreasonable Effectiveness of Mathematics": Communications on Pure and Applied Mathematics.v. 13 pp. 1-14, 1960. Wigner discusses the uncanny usefulness of mathematics, a gift he claims we neither understand nor deserve. Difficult but very interesting. QA1 C718 1960.

12. Penrose, Roger, The Emperor's New Mind. Oxford UK: University Press, 1989. This book is about the problem, as yet unsolved, of whether a computer can be made to think like a person. It covers a lot of modern math, computer science, and physics in the process. Q335 P415 1989.

13. Feynman, Richard P. & Leighton, Robert B. The Feynman Lectures on Physics, Three volumes Reading MA: Addison-Wesley, 1964.: Bongo-drum player, safecracker, and physicist, Feynman worked on the atomic bomb at Los Alamos, where he practiced the last two skills to the advancement of the Manhattan project and to the discomfiture of its military leadership. He gave these lectures in the early sixties at Cal Berkeley, and they have become a classic exposition of beginning physics. Here is a Nobel Laureate in Quantum Physics showing how mathematics is used to explain his part of the world. Spellbinding!!! QC21.2.F49 1989

14. Davis, Philip J and Hersch, Reuben. The Mathematical Experience. Boston, MA: Houghton Mifflin, 1981. One of the best popular surveys of the culture of mathematics. The description of a "pure" mathematician is worth a library visit all by itself, and there is a succinct account of Polya's advice on how to do your math homework. QA8.4 D37

If all else fails:

15. Carroll, Lewis. The Hunting of the Snark in The Annotated Snark. Martin Gardner, ed., New York: Simon and Schuster, 1962. An allegory of the search for mathematical truth in the form of an Agony in Eight Fits. PR 4611 H8 1962

216. Carroll, Lewis, Alice's Adventures in Wonderland. Kingsport, TE: Grosset and Dunlap, 1946.: The most widely read work of the world's best known mathematician. PZ8 D666 A1 1966Z.