

Preliminary Chapter on Induction

0.1. Fibonacci numbers and other recurrence sequences

0.2. Formulas for sums of powers of integers

0.3. The binomial theorem, Pascal's triangle, and the binomial coefficients

0.4. Additional Exercises: Induction applied to questions about recurrence sequences

Appendix 0A. A closed formula for sums of powers

0.5. Formulas for sums of powers of integers, II

Appendix 0B. Generating functions

0.6. Formulas for sums of powers of integers, III

0.7. The power series view on the Fibonacci numbers

Appendix 0C. Finding roots of polynomials

0.8. Solving the general cubic

0.9. Solving the general quartic

0.10. Surds

Appendix 0D. What is a group?

0.11. Examples and definitions

0.12. Matrices usually don't commute

Appendix 0E. Rings and fields

0.13. Mixing addition and multiplication together: Rings and fields

0.14. Algebraic numbers, integers, and units, I

Appendix 0F. Symmetric polynomials

0.15. The theory of symmetric polynomials

0.16. Some special symmetric polynomials

0.17. Algebraic numbers, integers, and units, II

Appendix 0G. Constructibility

0.18. Constructible using only compass and ruler