

24. Combinatorial Analysis

K. GOLDBERG,¹ M. NEWMAN,² E. HAYNSWORTH³

Contents

| | Page |
|---|------|
| Mathematical Properties | 822 |
| 24.1. Basic Numbers | 822 |
| 24.1.1 Binomial Coefficients | 822 |
| 24.1.2 Multinomial Coefficients | 823 |
| 24.1.3 Stirling Numbers of the First Kind | 824 |
| 24.1.4 Stirling Numbers of the Second Kind | 824 |
| 24.2. Partitions | 825 |
| 24.2.1 Unrestricted Partitions | 825 |
| 24.2.2 Partitions Into Distinct Parts | 825 |
| 24.3. Number Theoretic Functions | 826 |
| 24.3.1 The Möbius Function | 826 |
| 24.3.2 The Euler Function | 826 |
| 24.3.3 Divisor Functions | 827 |
| 24.3.4 Primitive Roots | 827 |
| References | 827 |
| | |
| Table 24.1. Binomial Coefficients $\binom{n}{m}$ | 828 |
| $n \leq 50, m \leq 25$ | |
| | |
| Table 24.2. Multinomials (Including a List of Partitions) | 831 |
| $n \leq 10$ | |
| | |
| Table 24.3. Stirling Numbers of the First Kind $S_n^{(m)}$ | 833 |
| $n \leq 25$ | |
| | |
| Table 24.4. Stirling Numbers of the Second Kind $\mathfrak{S}_n^{(m)}$ | 835 |
| $n \leq 25$ | |
| | |
| Table 24.5. Number of Partitions and Partitions Into Distinct Parts . . | 836 |
| $p(n), q(n), n \leq 500$ | |
| | |
| Table 24.6. Arithmetic Functions | 840 |
| $\varphi(n), \sigma_0(n), \sigma_1(n), n \leq 1000$ | |
| | |
| Table 24.7. Factorizations | 844 |
| $n < 10000$ | |
| | |
| Table 24.8. Primitive Roots, Factorization of $p-1$ | 864 |
| $n < 10000$ | |
| | |
| Table 24.9. Primes | 870 |
| $p \leq 10^5$ | |

^{1, 2} National Bureau of Standards.

³ National Bureau of Standards. (Presently, Auburn University.)