

CONTENTS

	PAGE
I. Introduction	1
II. Elementary functions and their classification	3
III. The integration of elementary functions. Summary of results	8
IV. The integration of rational functions	12
1-3. The method of partial fractions	12
4. Hermite's method of integration	15
5. Particular problems of integration	17
6. The limitations of the methods of integration	19
7. Conclusion	21
V. The integration of algebraical functions	22
1. Algebraical functions	22
2. Integration by rationalisation. Integrals associated with conics	23
3-6. The integral $\int R\{x, \sqrt{(ax^2 + 2bx + c)}\} dx$	24
7. Unicursal plane curves	30
8. Particular cases	33
9. Unicursal curves in space	35
10. Integrals of algebraical functions in general	35
11-14. The general form of the integral of an algebraical function. Integrals which are themselves algebraical	36
15. Discussion of a particular case	42
16. The transcendence of e^x and $\log x$	44
17. Laplace's principle	44
18. The general form of the integral of an algebraical function (<i>continued</i>). Integrals expressible by algebraical functions and logarithms	45

	PAGE
19. Elliptic and pseudo-elliptic integrals. Binomial integrals	47
20. Curves of deficiency 1. The plane cubic	48
21. Degenerate Abelian integrals	50
22. The classification of elliptic integrals	51
VI. The integration of transcendental functions	52
1. Preliminary	52
2. The integral $\int R(e^{ax}, e^{bx}, \dots, e^{kx}) dx$	52
3. The integral $\int P(x, e^{ax}, e^{bx}, \dots) dx$	55
4. The integral $\int e^x R(x) dx$. The logarithm-integral	56
5. Liouville's general theorem	59
6. The integral $\int \log x R(x) dx$	60
7. Conclusion	62
Appendix I. Bibliography	63
Appendix II. On Abel's proof of the theorem of v., § 11	66

