

Contents

Part I Review

1 General Properties of the Differential Equations	3
1 Notations and Definitions	3
2 Calculation of Limits	7
3 Application of the Calculation of Limits to Partial Differential Equations	18
4 Integration of Linear Equations with Periodic Coefficients	31
2 Theory of Integral Invariants	37
1 Various Properties of the Equations of Dynamics	37
2 Definitions of Integral Invariants	43
3 Transformation of Integral Invariants	53
4 Using Integral Invariants	57
3 Theory of Periodic Solutions	77
1 Existence of Periodic Solutions	77
2 Characteristic Exponents	84
3 Periodic Solutions of the Equations of Dynamics	89
4 Calculation of the Characteristic Exponents	106
5 Asymptotic Solutions	119
6 Asymptotic Solutions of the Equations of Dynamics	127

Part II Equations of Dynamics and the N-Body Problem

4 Study of the Case with Only Two Degrees of Freedom	147
1 Various Geometric Representations	147
5 Study of the Asymptotic Surfaces	161
1 Description of the Problem	161
2 First Approximation	163

3	Second Approximation	174
4	Third Approximation	195
6	Various Results	203
1	Periodic Solutions of the Second Kind	203
2	Divergence of Lindstedt's Series	222
3	Nonexistence of One-to-One Integrals	230
7	Attempts at Generalization	237
1	The N-Body Problem	237
	Erratum	241
	Bibliography	243
	Author Index	245
	Subject Index	247



<http://www.springer.com/978-3-319-52898-4>

The Three-Body Problem and the Equations of
Dynamics
Poincaré's Foundational Work on Dynamical Systems
Theory
Poincaré, H.
2017, XXII, 248 p. 9 illus., Hardcover
ISBN: 978-3-319-52898-4