Table of Contents

Seri	es Editor's Preface	i
Intr	oduction	1
Cha	pter I: General Notion of a Curve	5
1.1.	Definition of a Curve	5
1.2.	Normal Parametrization of a Curve	15
1.3.	Chains on a Curve and the Notion of an Inscribed Polygonal Line	
1.4.	Distance Between Curves and Curve Convergence	18
1.5.	On a Non-Parametric Definition of the Notion of a Curve	23
Cha	pter II: Length of a Curve	29
2.1.	Definition of a Curve Length and its Basic Properties	29
2.2.	Rectifiable Curves in Euclidean Spaces	33
2.3.	Rectifiable Curves in Lipshitz Manifolds	40
Cha	pter III: Tangent and the Class of One-Sidedly	
	Smooth Curves	43
3.1.	Definition and Basic Properties of One-Sidedly Smooth Curves	43
3.2.	Projection Criterion of the Existence of a Tangent in the Strong	
	Sense	47
3.3.	Characterizing One-Sidedly Smooth Curves with Contingencies	49
3.4.	One-Sidedly Smooth Functions	54
3.5.	Notion of c-Correspondence. Indicatrix of Tangents of a Curve	55
3.6.	One-Sidedly Smooth Curves in Differentiable Manifolds	63
Chaj	pter IV: Some Facts of Integral Geometry	75
4.1.	Manifold G_k^n of k-Dimensional Directions in V^n	75
4.2.	Imbedding of G_k^n into a Euclidean Space	80
4.3.	Existence of Invariant Measure of G_k^n	85
4.4.	Invariant Measure in G_k^n and Integral. Uniqueness of an Invariant	
	Measure	88
4.5.	Some Relations for Integrals Relative to the Invariant Measure in	G_k^n 93
4.6.	Some Specific Subsets of G_k^n	96
4.7.	Length of a Spherical Curve as an Integral of the	
	Function Equal to the Number of Intersection Points	101
4.8.	Length of a Curve as an Integral of Lengths of its Projections	105

vi	TABLE OF CONT	ENTS	
4.9.	Generalization of Theorems on the Mean Number of the Points of Intersection and Other Problems	109	
Chapter V: Turn or Integral Curvature of a Curve			
5.1.	Definition of a Turn. Basic Properties of Curves of a Finite Turn	118	
5.2.	Definition of a Turn of a Curve by Contingencies	127	
5.3.	Turn of a Regular Curve	132	
5.4.	Analytical Criterion of Finiteness of a Curve Turn	134	
5.5.	Basic Integro-Geometrical Theorem on a Curve Turn	139	
5.6.	Some Estimates and Theorems on a Limiting Transition	144	
5.7.	Turn of a Curve as a Limit of the Sum of Angles Between the Secants	148	
5.8.	Exact Estimates of the Length of a Curve	151	
5.9.	Convergence with a Turn	160	
5.10	Turn of a Plane Curve	164	
Cha	pter VI: Theory of a Turn on an n-Dimensional		
,	Sphere	175	
6.1.	Auxiliary Results	175	
6.2.	Integro-Geometrical Theorem on Angles and its Corrolaries	184	
6.3.	Definition and Basic Properties of Spherical Curves of a Finite		
	Geodesic Turn	191	
6.4.	Definition of a Geodesic Turn by Means of Tangents	197	
6.5.	Curves on a Two-Dimensional Sphere	203	
Cha	pter VII: Osculating Planes and Class of Curves with		
	an Osculating Plane in the Strong Sense	208	
7.1.	Notion of an Osculating Plane	208	
7.2.	Osculating Plane of a Plane Curve	211	
7.3.	Properties of Curves with an Osculating Plane in the Strong Sense	214	
Cha	pter VIII: Torsion of a Curve in a Three-		
	Dimensional Euclidean Space	217	
8.1.	Torsion of a Plane Curve	217	
8.2.	Curves of a Finite Complete Torsion	243	
8.3.	Complete Two-Dimensional Indicatrix of a Curve of a Finite		
	Complete Torsion	249	
8.4.	Continuity and Additivity of Absolute Torsion	254	
8.5.	Definition of an Absolute Torsion Through Triple Chains and		
	Paratingences	255	
8.6.	Right-Hand and Left-Hand Indices of a Point. Complete Torsion		
	of a Curve	257	

TABLE OF CONTENTS Chapter IX: Frenet Formulas and Theorems on Natural Parametrization	
9.2. Theorems on Natural Parametrization	275
Chapter X: Some Additional Remarks	
References	
Index	