CONTENTS

_		SACE	XI
		Chapter I	
		Certain Problems in the Theory of Continued Fractions	
§	1.	Convergents	1
§	2.	Transformations of Continued Fractions	9
§	3.	The Transformation of Series into Continued Fractions General Considerations in the Convergence Theory of	23
§		Continued Fractions	31
§	5.	Convergence Tests for Continued Fractions with Positive	40
		Coefficients	42
§	6.	Convergence Tests for Continued Fractions with Arbitrary Coefficients	46
§	7.	Convergence Tests for Continued Fractions which are	••
·		Periodic in the Limit	58
		CHAPTER II	
		Continued Fraction Expansions of Certain Functions	
§		A Solution of a Certain Riccati Equation with the help of Continued Fractions	76
§	2.	Continued Fraction Expansions of Binomial Functions	100
§	3.	The Continued Fraction Expansion of $\sqrt[x]{x}$	109
§	4.	Continued Fraction Expansions of the Natural Logarithm	110
8	5	Continued Fraction Expansions of e^x	112
3	٠.	1	

§	6.	Continued Fraction Expansions of the Inverse Trigonometric and Hyperbolic Functions	114
ç	7	Continued Fraction Expansions for $\tan x$ and $\tanh x$.	122
§			122
3	Ο.	The Continued Fraction Expansion of the Integral	
		$\int \frac{dx}{1+x^k} \cdot \cdot$	125
Ş	9	The Solution of the Equations of Boole and Riccati with	
3	٧.	the help of Continued Fractions	130
2	10	Continued Fractions and the Hypergeometric Series .	133
		Continued Fraction Expansions of Prym's Function .	142
		The Continued Fraction Expansion of the Incomplete	142
3	12.	Gamma-Function	148
		Gamma-runction	140
		CHAPTER III	
		Fruther Methodo ton Obtaining Dational	
		Further Methods for Obtaining Rational Function Approximations	
§	1.	Obreschkoff's Formula	151
§		The Derivation of Rational Function Approximations	
Ĭ		to Certain Functions with the Help of Obreschkoff's	
		Formula	155
§	3.	The Solution of Certain Difference Equations with the	
Č		Help of Continued Fractions	159
§	4.	The Derivation of Rational Function Approximations	
Ŭ		by means of Iteration	163
§	5.	Table of Approximate Values of e^x	165
§		Table of Approximate Values of $\ln x$	166
§	7.	Table of Approximate Values of $\tan x$ and $\tanh x$.	167
§	8.	Rational Function Approximations for $\sinh x$ and $\sin x$	167
ş	9.	Rational Function Approximations for $\cosh x$ and $\cos x$	171
	10.	Rational Function Approximations to the Error	•••
J		Function	174
Ş	11.	The Continued Fraction Expansion of Stirling's Series	175
		Rational Function Approximations for $\Gamma(1+x)$	177

CHAPTER IV

Generalized Continued Fractions

§	1.	The Computation of Square Roots with the Help of	
		Matrices of the Second Order	182
§	2.	The Solution of Quadratic Equations with the Help of	
•		Matrices of the Second Order	188
		The Calculation of Cube Roots with the Help of Matrices	194
§	4.	The Calculation of Fourth Roots with the Help of	
		Matrices	196
§	5.	The Calculation of Roots of Arbitrary Rational Order	
		with the Help of a Matrix	198
§	6.	The Solution of Cubic Equations with the Help of	
		Matrices	199
§	7.	The Solution of Equations of Higher Order with the	
		Help of Matrices	201
Lı	TE:	RATURE IN THE RUSSIAN LANGUAGE ON THE GENERAL	
		THEORY OF CONTINUED FRACTIONS	203
R	References		
St	PP	LEMENTARY REFERENCES	210
In	DE	X	211