## Contents

## PART I FROM CALCULUS TO ANALYSIS

CHAPTER II.2 Constructive and Non-constructive Methods in Mathematics  CHAPTER II.3 Common Measures, Highest Common Factors and the Game of Euclid  CHAPTER II.4 Sides and Diagonals of Regular Polygons  CHAPTER II.5 Numbers and Arithmetic—A Quick Review  CHAPTER II.6 Infinite Decimals (Part 1)  CHAPTER II.8 Recurring Nines  CHAPTER II.9 Fractions and Recurring Decimals  CHAPTER II.10 The Fundamental Property of Real Numbers  CHAPTER II.11 The Arithmetic of Infinite Decimals  CHAPTER II.12 Reflections on Recurring Themes  CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry  CHAPTER III.1 Comparing Areas  CHAPTER III.2 Comparing Volumes  CHAPTER III.3 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number?  CHAPTER IV.2 What Is a Function?	Chapter I.1 Chapter I.2	What's Wrong with the Calculus? Growth and Change in Mathematics	3 13
CHAPTER II.2 Constructive and Non-constructive Methods in Mathematics  CHAPTER II.3 Common Measures, Highest Common Factors and the Game of Euclid  CHAPTER II.4 Sides and Diagonals of Regular Polygons  CHAPTER II.5 Numbers and Arithmetic—A Quick Review  CHAPTER II.6 Infinite Decimals (Part 1)  CHAPTER II.7 Infinite Decimals (Part 2)  CHAPTER II.8 Recurring Nines  CHAPTER II.9 Fractions and Recurring Decimals  CHAPTER II.10 The Arithmetic of Infinite Decimals  CHAPTER II.11 The Arithmetic of Infinite Decimals  CHAPTER II.12 Reflections on Recurring Themes  CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry  CHAPTER III.2 Comparing Areas  CHAPTER III.3 Comparing Volumes  CHAPTER III.4 Comparing Volumes  CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number?  CHAPTER IV.2 What Is a Function?		PART II NUMBER	
Mathematics Chapter II.3 Common Measures, Highest Common Factors and the Game of Euclid Chapter II.4 Sides and Diagonals of Regular Polygons Chapter II.5 Numbers and Arithmetic—A Quick Review Chapter II.7 Infinite Decimals (Part 1) Chapter II.8 Recurring Nines Chapter II.9 Fractions and Recurring Decimals Chapter II.10 The Arithmetic of Infinite Decimals Chapter II.11 The Arithmetic of Infinite Decimals Chapter II.12 Reflections on Recurring Themes Chapter II.13 Continued Fractions  PART III GEOMETRY  Chapter III.1 Numbers and Geometry Chapter III.1 Comparing Areas Chapter III.2 Comparing Volumes Chapter III.3 Comparing Volumes Chapter III.4 Comparing Volumes Chapter III.5 Curves and Surfaces  PART IV FUNCTIONS  Chapter IV.1 What Is a Number? Chapter IV.2 What Is a Function?	Chapter II.1		27
CHAPTER II.3 Common Measures, Highest Common Factors and the Game of Euclid  CHAPTER II.4 Sides and Diagonals of Regular Polygons CHAPTER II.5 Numbers and Arithmetic—A Quick Review Infinite Decimals (Part 1) Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers CHAPTER II.11 The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 Comparing Areas CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	Chapter II.2		37
Game of Euclid CHAPTER II.4 Sides and Diagonals of Regular Polygons CHAPTER II.5 Numbers and Arithmetic—A Quick Review CHAPTER II.6 Infinite Decimals (Part 1) CHAPTER II.7 Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers CHAPTER II.11 The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	G 11.3		31
CHAPTER II.4 Sides and Diagonals of Regular Polygons CHAPTER II.5 Numbers and Arithmetic—A Quick Review CHAPTER II.6 Infinite Decimals (Part 1) CHAPTER II.7 Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers CHAPTER II.11 The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHAPTER 11.3		40
CHAPTER II.5 Numbers and Arithmetic—A Quick Review CHAPTER II.6 Infinite Decimals (Part 1) CHAPTER II.7 Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers CHAPTER II.11 The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 Comparing Areas CHAPTER III.3 Comparing Volumes CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHARTER II 4	<del></del>	51
CHAPTER II.6 Infinite Decimals (Part 1) CHAPTER II.7 Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	-		59
CHAPTER II.7 Infinite Decimals (Part 2) CHAPTER II.8 Recurring Nines CHAPTER II.9 Fractions and Recurring Decimals CHAPTER II.10 The Fundamental Property of Real Numbers The Fundamental Property of Real Numbers The Arithmetic of Infinite Decimals CHAPTER II.12 Reflections on Recurring Themes CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?			70
CHAPTER II.9 CHAPTER II.9 CHAPTER II.10 CHAPTER II.11 CHAPTER II.11 CHAPTER II.12 CHAPTER II.12 CHAPTER II.13 COntinued Fractions  PART III GEOMETRY  CHAPTER III.1 CHAPTER III.2 CHAPTER III.2 CHAPTER III.3 COmparing Areas CHAPTER III.4 COmparing Volumes CHAPTER III.5 CHAPTER III.5 CHAPTER III.6 CHAPTER III.7 CHAPTER III.7 CHAPTER III.8 CHAPTER III.9 CHAPTER IV.1 CHAPTER IV.1 CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?			81
CHAPTER II.10 CHAPTER II.11 The Fundamental Property of Real Numbers The Fundamental Property of Real Numbers The Arithmetic of Infinite Decimals The Arithmetic of Infinite D	CHAPTER II.8		96
CHAPTER II.12 CHAPTER II.12 CHAPTER II.13 CHAPTER II.13 CHAPTER II.13 CHAPTER II.13 CHAPTER II.13 CHAPTER III.13 CHAPTER III.1 CHAPTER III.2 CHAPTER III.3 CHAPTER III.3 CHAPTER III.4 CHAPTER III.5 CHAPTER III.5 CHAPTER III.5 CHAPTER III.6 CHAPTER III.7 CHAPTER III.7 CHAPTER III.8 CHAPTER III.9 CHAPTER III.9 CHAPTER III.1 C	•		100
CHAPTER II.12 Reflections on Recurring Themes  CHAPTER II.13 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 Comparing Areas CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?			118
CHAPTER II.12 Continued Fractions  PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?			123 134
PART III GEOMETRY  CHAPTER III.1 Numbers and Geometry CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?		Reflections on Recurring Themes	134
CHAPTER III.1 Numbers and Geometry CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHAPTER 11.13	Continued Fractions	137
CHAPTER III.2 The Role of Geometrical Intuition CHAPTER III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?		PART III GEOMETRY	
CHAPTER III.2 The Role of Geometrical Intuition COMPART III.3 Comparing Areas CHAPTER III.4 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHAPTER III.1	Numbers and Geometry	157
CHAPTER III.3 Comparing Volumes CHAPTER III.5 Comparing Volumes CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHAPTER III.2	The Role of Geometrical Intuition	162
CHAPTER III.5 Curves and Surfaces  PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? CHAPTER IV.2 What Is a Function?	CHAPTER III.3	Comparing Areas	164
PART IV FUNCTIONS  CHAPTER IV.1 What Is a Number? 2 CHAPTER IV.2 What Is a Function? 2			204 232
CHAPTER IV.1 What Is a Number? 2 CHAPTER IV.2 What Is a Function? 2	CHAPTER III.5	Curves and Surfaces	232
CHAPTER IV.2 What Is a Function?		PART IV FUNCTIONS	
CHAPTER IV.2 What Is a Function?	CHAPTER IV.1	What Is a Number?	247
CHAPTER IV.3 What Is an Exponential Function?		What Is a Function?	254
	CHAPTER IV.3	What Is an Exponential Function?	285
Index 3	Inday		301