Contents

Preface **3**

1 The Basics **9**
1.1 Mathematical Economics as a Field of Science 9
1.2 Course Characteristics 10
1.3 Modelling 10
1.4 Principles of Solving Economic Problems 14
1.5 Overview of Mathematical Tools 15
1.5.1 Calculus of Functions of One Variable 15
1.5.2 Calculus of Functions of More Variables 25

2 Demand and Supply **35**
2.1 Basic Demand Analysis 35
2.1.1 General Many-Factor Model 36
2.1.2 Single-Factor Models 36
2.1.3 Many-Factor Models 43
2.2 Basic Supply Analysis 45
2.2.1 General Many-Factor Model 45
2.2.2 Single-Factor Model 46
2.3 Market Equilibrium 49
2.4 Multipliers for Microeconomic Variables 54
2.5 Consumer's Surplus 57
2.6 Producer's Surplus 57
Problems 60

3 Revenue, Cost, Profit **63**
3.1 Revenue 63
3.2 Cost 65
3.3 Profit, Break-Even Points 70
3.4 Supply Construction 73
Problems 75

4 Elasticity **79**
4.1 The Concept of Elasticity - Motivation 79
4.2 Single-Factor Model 80
4.3 Many-Factor Model 85
Problems 89

5 Production **93**
5.1 Single-Input Model 93
5.2 Two-Input Model 97
Problems 104

6 Utility **107**
6.1 Utility and Consumer's Decisions 107
6.2 Utility Model 109
6.3 Optimization 116
Problems 122

7 National Income **125**
7.1 Simplified Macroeconomic Model 125
7.2 Consumption and Savings 126
7.3 Models of National Economy 129
7.4 Multipliers for Macroeconomic Variables 135
Problems 138

8 Miscellaneous Problems **141**

9 Solutions to Problems **147**

Summary **171**

References **173**

Index **174**