

Pure Mathematics

1. Study of prime numbers distribution using number theory.
2. Analyzing properties of different types of series (e.g., Taylor series, Fourier series).
3. Investigation into the Riemann Hypothesis.
4. Applications of group theory in cryptography.
5. Exploration of different types of geometries (e.g., Euclidean, hyperbolic).
6. Research on different types of mathematical proofs (e.g., constructive, non-constructive).
7. Analysis of chaotic dynamics in nonlinear systems.
8. Applications of algebraic topology in data analysis.
9. Study of different types of functions and their properties.
10. Investigation into the theory of partitions.

Applied Mathematics

11. Mathematical modeling of epidemics.
12. Optimization techniques in operations research.
13. Applications of graph theory in network analysis.
14. Analysis of wave propagation using partial differential equations.
15. Financial mathematics and portfolio optimization.
16. Study of mathematical models in ecology and population dynamics.
17. Fluid dynamics and mathematical modeling of turbulence.
18. Applications of differential geometry in physics.
19. Numerical methods for solving differential equations.
20. Mathematical modeling of climate change.

Probability and Statistics

21. Bayesian inference and its applications.
22. Analysis of big data using statistical methods.
23. Study of stochastic processes.
24. Applications of machine learning algorithms in statistics.
25. Statistical analysis of sports data.
26. Design and analysis of experiments.
27. Time series analysis and forecasting.
28. Multivariate statistical analysis techniques.
29. Study of Markov chains and their applications.
30. Statistical methods in quality control and reliability.

Computational Mathematics

31. Development of algorithms for solving NP-hard problems.
32. High-performance computing in numerical simulations.

33. Computational methods for image processing.
34. Applications of machine learning in computational mathematics.
35. Cryptanalysis using computational methods.
36. Study of parallel computing techniques in mathematics.
37. Computational fluid dynamics simulations.
38. Finite element methods in engineering applications.
39. Computational neuroscience and brain modeling.
40. Computational approaches to optimization problems.

Mathematical Physics

41. Study of mathematical methods in quantum mechanics.
42. Applications of tensor analysis in general relativity.
43. Mathematical modeling of black holes.
44. Chaos theory and its applications in physics.
45. Study of mathematical models in fluid dynamics.
46. Applications of symmetry groups in physics.
47. Quantum field theory and its mathematical foundations.
48. Study of nonlinear waves in physics.
49. Mathematical models in cosmology.
50. Mathematical analysis of phase transitions.

Operations Research

51. Optimization techniques in supply chain management.
52. Mathematical models in healthcare delivery systems.
53. Game theory and its applications in decision-making.
54. Transportation network modeling and optimization.
55. Applications of queuing theory in service systems.
56. Inventory management and optimization.
57. Facility location and layout optimization.
58. Mathematical models in project management.
59. Decision support systems using operations research.
60. Mathematical modeling in risk management.

Discrete Mathematics

61. Combinatorial optimization problems.
62. Study of graph algorithms and their applications.
63. Applications of coding theory in communication systems.
64. Ramsey theory and its applications.
65. Applications of discrete mathematics in computer science.
66. Cryptographic protocols and their mathematical foundations.
67. Study of lattice theory and its applications.

68. Enumeration problems in combinatorics.
69. Mathematical models in social networks.
70. Applications of game theory in evolutionary biology.

Algebra and Number Theory

71. Study of algebraic structures (e.g., rings, fields).
72. Applications of number theory in cryptography.
73. Representation theory and its applications.
74. Study of algebraic curves and surfaces.
75. Analytic number theory and its applications.
76. Algebraic coding theory and its applications.
77. Diophantine equations and their solutions.
78. Study of algebraic geometry and its applications.
79. Applications of Galois theory in mathematics.
80. Study of modular forms and their properties.

Mathematical Biology

81. Population dynamics modeling.
82. Mathematical models of gene regulatory networks.
83. Spatial ecology and mathematical modeling.
84. Epidemiological modeling and disease spread.
85. Mathematical models in neuroscience.
86. Study of ecological networks using graph theory.
87. Evolutionary game theory and its applications.
88. Mathematical models in immunology.
89. Mathematical approaches to cancer modeling.
90. Mathematical ecology and biodiversity.

Mathematical Economics

91. Game theory and economic decision-making.
92. Mathematical models of market dynamics.
93. Study of financial derivatives pricing models.
94. Econometric analysis using statistical methods.
95. Mathematical models in macroeconomics.
96. Behavioral economics and decision theory.
97. Study of voting systems and social choice theory.
98. Applications of game theory in mechanism design.
99. Mathematical modeling of auctions and bidding strategies.
100. Mathematical finance and risk management.

History of Mathematics

101. Study of ancient mathematical texts.
102. Contributions of women mathematicians throughout history.
103. Development of mathematical notation systems.
104. Historical study of mathematical discoveries.
105. Biographies of famous mathematicians.
106. Influence of cultural factors on mathematical development.
107. Study of mathematical achievements in different civilizations.
108. History of mathematical education and pedagogy.
109. Mathematical methods in ancient architecture.
110. Historical perspectives on the foundations of mathematics.

Mathematics Education

111. Effectiveness of different teaching methods in mathematics.
112. Use of technology in mathematics education.
113. Study of student learning styles in mathematics.
114. Assessment methods in mathematics education.
115. Integration of real-world applications in mathematics curriculum.
116. Mathematical problem-solving strategies.
117. Teacher training and professional development in mathematics.
118. Mathematics anxiety and its impact on learning.
119. Cross-cultural studies in mathematics education.
120. Curriculum development in mathematics.

Philosophy of Mathematics

121. Ontological and epistemological foundations of mathematics.
122. Study of mathematical realism vs. nominalism.
123. Mathematical Platonism and its implications.
124. Philosophy of mathematical proof.
125. Intuitionism and constructivism in mathematics.
126. Axiomatic systems and their philosophical underpinnings.
127. Mathematics as a formal system of knowledge.
128. Ethics in mathematical practice.
129. Mathematical knowledge and its application to the real world.
130. Philosophy of mathematical education.

Interdisciplinary Mathematics

131. Mathematics of music theory and composition.
132. Mathematical analysis of art and aesthetics.
133. Mathematical modeling in archaeology.
134. Mathematical approaches to linguistics.
135. Applications of mathematics in social sciences.

136. Mathematical methods in computer vision.
137. Mathematical models in political science.
138. Mathematics in sports analytics.
139. Mathematical techniques in music signal processing.
140. Applications of mathematics in digital humanities.

Industrial Mathematics

141. Optimization in manufacturing processes.
142. Applications of mathematics in aerospace engineering.
143. Mathematical modeling in pharmaceutical industries.
144. Logistics and supply chain optimization.
145. Applications of data mining in industrial processes.
146. Mathematical models in energy systems.
147. Risk assessment and management using mathematical methods.
148. Mathematical approaches to quality control.
149. Mathematical modeling in telecommunications.
150. Mathematical methods in environmental engineering.

Actuarial Mathematics

151. Risk assessment in insurance industries.
152. Financial forecasting using actuarial models.
153. Pension fund management and optimization.
154. Analysis of mortality tables and life insurance.
155. Applications of stochastic processes in actuarial science.
156. Health insurance modeling and pricing.
157. Long-term care insurance analysis.
158. Solvency analysis using mathematical models.
159. Actuarial valuation of liabilities.
160. Applications of machine learning in actuarial science.

Mathematical Computing

161. Development of mathematical software tools.
162. Performance analysis of numerical algorithms.
163. Parallel computing techniques in mathematical simulations.
164. Applications of artificial intelligence in mathematical computing.
165. Visualization techniques in mathematical data analysis.
166. Computational geometry algorithms.
167. Study of cloud computing in mathematical applications.
168. Big data analytics using mathematical approaches.
169. High-dimensional data analysis techniques.
170. Quantum computing and its impact on mathematical simulations.

Other Topics in Mathematics

171. Mathematical models in transportation planning.
172. Mathematical aspects of game theory in economics.
173. Computational methods in mathematics education.
174. Mathematical models in weather prediction.
175. Study of mathematical puzzles and recreational mathematics.
176. Applications of mathematical logic in computer science.
177. Mathematical foundations of machine learning algorithms.
178. Mathematical modeling in urban planning.
179. Analysis of mathematical art and symmetry.
180. Mathematical models in forensic science.

Further Specialized Topics

181. Mathematical models in the food industry.
182. Mathematical approaches to textile design.
183. Applications of mathematics in robotics.
184. Mathematical techniques in historical linguistics.
185. Mathematical methods in biotechnology.
186. Study of mathematical models in cultural evolution.
187. Applications of mathematics in video game design.
188. Mathematical models in medical imaging.
189. Mathematical analysis of music composition.
190. Mathematical methods in material science.

Emerging Areas in Mathematics

191. Applications of blockchain technology in mathematics.
192. Mathematical modeling in smart cities.
193. Mathematical approaches to cybersecurity.
194. Mathematics of quantum information theory.
195. Mathematical modeling of social networks.
196. Applications of machine learning in mathematical research.
197. Mathematical modeling in virtual reality environments.
198. Mathematical methods in autonomous systems.
199. Mathematical aspects of bioinformatics.
200. Mathematical modeling in sustainable development.