1. Record Nr. UNINA9910779176003321

Autore	Adam John A
Titolo	X and the city [[electronic resource]] : modeling aspects of urban life / / John Adam
Pubbl/distr/stampa	Princeton, : Princeton University Press, c2012
ISBN	1-280-49404-2 9786613589279 1-4008-4169-0
Edizione	[Course Book]
Descrizione fisica	1 online resource (340 p.)
Disciplina	307.7601/5118
Soggetti	Mathematical models City and town life - Mathematical models Cities and towns - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Frontmatter -- Preface -- Chapter 1. Introduction -- Chapter 2. Getting to the city -- Chapter 3. Living in the city -- Chapter 4. Eating in the city -- Chapter 5. Gardening in the city -- Chapter 6. Summer in the city -- Chapter 7. Not driving in the city! -- Chapter 8. Driving in the city -- Chapter 9. Probability in the city -- Chapter 10. Traffic in the city -- Chapter 11. Car following in the city-I -- Chapter 12. Car following in the city-II -- Chapter 13. Congestion in the city -- Chapter 14. Roads in the city -- Chapter 15. Sex and the city -- Chapter 16. Growth and the city -- Chapter 17. The axiomatic city -- Chapter 18. Scaling in the city -- Chapter 19. Air pollution in the city -- Chapter 20. Light in the city -- Chapter 21. Nighttime in the city-I -- Chapter 22. Nighttime in the city-II -- Chapter 23. Lighthouses in the city? -- Chapter 24. Disaster in the city? -- Chapter 25. Getting away from the city -- Appendix 1. Theorems for Princess Dido -- Appendix 2. Princess Dido and the sinc function -- Appendix 3. Taxicab geometry -- Appendix 4. The Poisson distribution -- Appendix 5. The method of Lagrange multipliers -- Appendix 6. A spiral braking path -- Appendix 7. The average distance between two random points in a circle -- Appendix 8. Informal "derivation" of the logistic differential equation --

Appendix 9. A miniscule introduction to fractals -- Appendix 10. Random walks and the diffusion equation -- Appendix 11. Rainbow/Halo details -- Appendix 12. The Earth as vacuum cleaner? -- Annotated references and notes -- Index

Sommario/riassunto

X and the City, a book of diverse and accessible math-based topics, uses basic modeling to explore a wide range of entertaining questions about urban life. How do you estimate the number of dental or doctor's offices, gas stations, restaurants, or movie theaters in a city of a given size? How can mathematics be used to maximize traffic flow through tunnels? Can you predict whether a traffic light will stay green long enough for you to cross the intersection? And what is the likelihood that your city will be hit by an asteroid? Every math problem and equation in this book tells a story and examples are explained throughout in an informal and witty style. The level of mathematics ranges from precalculus through calculus to some differential equations, and any reader with knowledge of elementary calculus will be able to follow the materials with ease. There are also some more challenging problems sprinkled in for the more advanced reader. Filled with interesting and unusual observations about how cities work, X and the City shows how mathematics undergirds and plays an important part in the metropolitan landscape.