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Autore	Dixon Martyn R (Martyn Russell), <1955->
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Exercise Set 6.2.3 Symmetric Forms over  $\mathbb{R}$ ; Exercise Set 6.3; 6.4 Euclidean Spaces; Exercise Set 6.4; CHAPTER 7 RINGS; 7.1 Rings, Subrings, and Examples; Exercise Set 7.1; 7.2 Equivalence Relations; Exercise Set 7.2; 7.3 Ideals and Quotient Rings; Exercise Set 7.3; 7.4 Homomorphisms of Rings; Exercise Set 7.4; 7.5 Rings of Polynomials and Formal Power Series; Exercise Set 7.5; 7.6 Rings of Multivariable Polynomials; Exercise Set 7.6; CHAPTER 8 GROUPS; 8.1 Groups and Subgroups; Exercise Set 8.1; 8.2 Examples of Groups and Subgroups; Exercise Set 8.2; 8.3 Cosets; Exercise Set 8.3  
8.4 Normal Subgroups and Factor Groups; Exercise Set 8.4; 8.5 Homomorphisms of Groups; Exercise Set 8.5; CHAPTER 9 ARITHMETIC PROPERTIES OF RINGS; 9.1 Extending Arithmetic to Commutative Rings; Exercise Set 9.1; 9.2 Euclidean Rings; Exercise Set 9.2; 9.3 Irreducible Polynomials; Exercise Set 9.3; 9.4 Arithmetic Functions; Exercise Set 9.4; 9.5 Congruences; Exercise Set 9.5; CHAPTER 10 THE REAL NUMBER SYSTEM; 10.1 The Natural Numbers; 10.2 The Integers; 10.3 The Rationals; 10.4 The Real Numbers; ANSWERS TO SELECTED EXERCISES; INDEX

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### Sommario/riassunto

Explore the main algebraic structures and number systems that play a central role across the field of mathematics. Algebra and number theory are two powerful branches of modern mathematics at the forefront of current mathematical research, and each plays an increasingly significant role in different branches of mathematics, from geometry and topology to computing and communications. Based on the authors' extensive experience within the field, Algebra and Number Theory has an innovative approach that integrates three disciplines—linear algebra, abstract algebra, and number the

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