Calculus 1, Appendices Study Guide
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The following is a *brief* list of topics covered in the Appendices of *Thomas' Calculus*.

A.1. Real Numbers and the Real Line. Real numbers $\mathbb{R}$, the real number line and the geometric representation of $\mathbb{R}$, algebraic (field) properties, order properties, completeness property, set, element of a set, union of sets, intersection of sets, empty set $\varnothing$, subset, superset, natural numbers $\mathbb{N}$, integers $\mathbb{Z}$, rational numbers $\mathbb{Q}$, irrational numbers, countable and uncountable sets of real numbers, interval, interval notation, open/closed/half-open intervals, finite/infinite interval, boundary points and interior points of an interval, inequalities expressed in terms of intervals, absolute value function, absolute value as a measure of distance, square roots are never negative, properties of absolute value, the Triangle Inequality for absolute value.

A.2. Mathematical Induction. The Induction Principle, the concept of induction in terms of falling dominos, applications of mathematical induction to summation formulas (Example A.2.1, Exercise A.2.9, and Exercise A.2.10), a generalization of the Derivative Sum Rule (Example A.2.A), proof of the General Product Rule of Exercise 3.3.77 (Example A.2.B).

A.3. Lines Circles and Parabolas.

A.4. Proofs of Limit Theorems. Proofs based on the ε/δ definition of limit of the Limit Product Rule (Theorem 2.1(4), the Limit Quotient Rule (Theorem 2.1(5), and the Sandwich Theorem (Theorem 2.4).

A.5. Commonly Occurring Limits

A.6. Theory of the Real Numbers. The idea of a continuum, field axioms, order axioms, ordered field, upper bound, least upper bound, complete ordered field, the definition of the real numbers as a complete ordered field, the rational numbers $\mathbb{Q}$ are not a complete ordered field, completeness described in terms of an airplane taking off, Richard Dedekind and Dedekind cuts.