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Elementary analysis through examples and exercises.

This volume on mathematical analysis offers a comprehensive set of both traditional and new examples and exercises with detailed solutions. It includes many topics important in current research that are not found in other basic analysis books. It begins with a comparison of real numbers viewed as a totally ordered field or, alternatively, constructed using the Dedekind cut method. Properties surrounding real numbers are explored and many interesting relationships are proven using mathematical induction. Functions are then developed with special emphasis on topics such as asymptotics, n-levels of composition and periodicity of certain functions. Sequences and series for both the discrete and continuous case are concurrently developed showing contrast whenever possible. The order of growth for sequences diverging to infinity is incorporated with its counterpart given for functions. The usual properties of functions, together with their limit theory including the differential calculus are compared carefully with examples illustrating their fundamental properties. The graphs of these functions are then closely studied giving as much detail as possible for a wide variety of functions.

Classification: 115