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Comparison of some tests for convergence of positive series.

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Summary: In this survey, aimed at professors and students of undergraduate analysis courses, two hierarchies of tests are considered. The first is originated from the ratio test and the second from the root test. The test construction techniques are exposed and relations between the tests in each family are discussed. The examples of convergent and divergent series clarify the range of application for each of the introduced tests and situations when they are not conclusive. The behaviour of the partial sums of these series is illustrated geometrically and the level of complexity of each series is evaluated in terms of the rate of its convergence or divergence.

Classification: I30

Keywords: numerical series; positive series; convergence and divergence tests; hierarchies of tests

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