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**Abstract.** In the study of an arithmetic function  $a_n$  one is often interested in the asymptotic behaviour of  $\sum_{n \leq X} a_n$  for large  $X$ . Indeed the study of such asymptotic behaviour is one of the defining goals of analytic number theory. For large classes of functions there is no theoretic machinery available. In such cases one resorts to experimental methods. These are discussed in this paper. In particular the “constant of proportionality” has often an intricate structure. To identify this constant one needs to be able to determine it as precisely as possible. One is then confronted with what is a statistical problem. We discuss here possible solutions to this problem and compare the accuracy of the results they yield.

**Keywords.** Arithmetic functions, asymptotic behaviour, Tauberian theorems, numerical estimation, complete exponential sums.

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