

The maximal order of a class of multiplicative arithmetical functions

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Abstract

We give the maximal order of a class of multiplicative arithmetical functions, including certain functions of the type $\sigma A(n) = \sum_{d \in A(n)} d$, where $A(n)$ is a subset of the set of all positive divisors of n . As special cases we obtain the maximal orders of the divisor-sum function $\sigma(n)$ and its analogues $\sigma^*(n)$, $\sigma^{(e)}(n)$, $\sigma^{**}(n)$, $\sigma A(n)$, representing the sum of unitary divisors, exponential divisors, bi-unitary divisors and elements of a regular system A of divisors of n , respectively. We also give the minimal order of another class of multiplicative functions, including the Euler function $\phi(n)$, its unitary analogue $\phi^*(n)$ and their common generalizations. We pose the problem of finding the maximal order of a σ -type function not covered by our results.