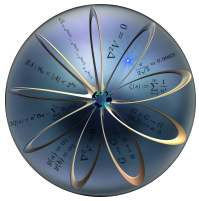

planetmath.org

Math for the people, by the people.

Liouville function

Canonical name	LiouvilleFunction
Date of creation	2013-03-22 11:47:09
Last modified on	2013-03-22 11:47:09
Owner	KimJ (5)
Last modified by	KimJ (5)
Numerical id	12
Author	KimJ (5)
Entry type	Definition
Classification	msc 20G10
Classification	msc 11A25
Classification	msc 81-00

The *Liouville function* is defined by $\lambda(1) = 1$ and $\lambda(n) = (-1)^{k_1+k_2+\cdots+k_r}$, if the prime factorization of $n > 1$ is $n = p_1^{k_1} p_2^{k_2} \cdots p_r^{k_r}$ (where each p_i is positive). This function is completely multiplicative and the

$$\sum_{d|n} \lambda(d) = \begin{cases} 1 & \text{if } n = m^2 \text{ for some integer } m \\ 0 & \text{otherwise,} \end{cases}$$

where the sum runs over all positive divisors of n.