Contents

Chapter 1

Functions

1.1 multiplicative – multiplicative number theoretic functions

All functions of this module accept only positive integers, unless otherwise noted.

1.1.1 euler – the Euler totient function

euler(`n`: *integer*) → *integer*

Return the number of numbers relatively prime to `n` and smaller than `n`. In the literature, the function is referred often as φ.

1.1.2 moebius – the Möbius function

moebius(`n`: *integer*) → *integer*

Return:

-1 if n has odd distinct prime factors,

1 if n has even distinct prime factors, or

0 if n has a squared prime factor.

In the literature, the function is referred often as μ.

1.1.3 sigma – sum of divisor powers)

sigma(`m`: *integer*, `n`: *integer*) → *integer*

Return the sum of `m`-th powers of the factors of `n`. The argument `m` can be zero,

then return the number of factors. In the literature, the function is referred often as σ.

Examples

```
>>> multiplicative.euler(1)
1
>>> multiplicative.euler(2)
1
>>> multiplicative.euler(4)
2
>>> multiplicative.euler(5)
4
>>> multiplicative.moebius(1)
1
>>> multiplicative.moebius(2)
-1
>>> multiplicative.moebius(4)
0
>>> multiplicative.moebius(6)
1
>>> multiplicative.sigma(0, 1)
1
>>> multiplicative.sigma(1, 1)
1
>>> multiplicative.sigma(0, 2)
2
>>> multiplicative.sigma(1, 3)
4
>>> multiplicative.sigma(1, 4)
7
>>> multiplicative.sigma(1, 6)
12L
>>> multiplicative.sigma(2, 7)
50
```

Bibliography