Mathematics Knowledge Base

neilfvhv

November 5, 2016

1 Number Theory

1.1 Fundamental theorem of arithmetic

Any integer $a > 1$ can be factored in a unique way as

$$a = p_1^{a_1} \times p_2^{a_2} \times \cdots \times p_t^{a_t}$$

where $p_1 < p_2 < \ldots < p_t$ are prime numbers and where each a_i is a positive integer.

1.2 Euler's function

For any integer $n > 1$:

$$n = p_1^{a_1} \times p_2^{a_2} \times \cdots \times p_t^{a_t}$$

$$\phi(n) = ((p_1 - 1) \times p_1^{a_1 - 1}) \times (p_1 - 1) \times ((p_2 - 1) \times p_2^{a_2 - 1}) \times \cdots \times ((p_t - 1) \times p_t^{a_t - 1})$$

2 Complex Analysis

2.1 Euler's formula

For any real number x:

$$e^{ix} = \cos x + i \sin x$$

where e is the base of the natural logarithm, i is the imaginary unit.