

The index of composition of an integer

Jean-Marie De Koninck
Laval University

Thursday, April 26, 2007
007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

For each integer n at least 2, let $\gamma(n)$ denote the product of the primes which divide n . For example, $\gamma(12) = 6$. We define $\lambda(n)$, “the index of composition” of n , as the logarithm of n in the base $\gamma(n)$, that is, $\lambda(n) := (\log n)/(\log \gamma(n))$. In a sense, $\lambda(n)$ measures the level of compositeness of n . Although $\lambda(n)$ can be arbitrarily large, one can show that the average value of $\lambda(n)$ is 1, that is, the average over the first x integers tends to 1 as x tends to infinity. The study of the local behavior of n is more intricate: for example, can two consecutive values of λ be both arbitrarily large? This is related to the famous *abc* conjecture.