

ACHIEVING THE LARGEST PRIMES: ALGORITHM AND
RELATIONS IN ORDER

Ali Zalnejhad¹, Ghasem Shabani², Mehdi Zalnejhad³Hossein
Zalnejhad⁴

¹*Noshiravani University of Technology, Babol, Iran*

²*University of Tabriz, Tabriz, Iran*

³*Noshiravani University of Technology, Babol, Iran*

⁴*Science and Research Branch of Islamic Azad University, Tehran, Iran*

MSC 2000: 11N05, 11N32, 11N80

Abstract

Prime numbers are currently attained through an exceptional situation in the area of numbers theory and cryptography. The trend for accessing to the largest prime numbers due to using Mersenne theorem, although resulted in vast development of related numbers, it has reduced the speed of accessing to prime numbers from one to four years. Mersenne primes are prime numbers of the form $2^n - 1$, where n is necessarily a prime number. This paper focuses on attaining theorems that are more extended than Mersenne theorem with accelerating the speed of accessing to prime numbers. Since the reason for frequently using Mersenne theorem has found an efficient formula for accessing to the largest prime numbers, this paper provides some relations for prime numbers defined in several formulas for attaining prime numbers in any interval. Therefore, according to flexibility of these relations, it could be found a new branch in the field of accessing to great prime numbers through providing an algorithm at the end of this paper for finding the largest prime numbers.

Keywords: Generalization the Mersenne's theorem, Relations of Prime numbers, Algorithm

References

- [1] M. Agrawal, N. Kayal, and N. Saxena, PRIMES is in P, *Annals of mathematics* **160** (2004) 781-793.
- [2] P. Ribenboim, *The Little Book of Bigger Primes*, Second ed, Springer Science & Business Media, 2004.

¹ali.zalnejad@stu.nit.ac.ir

²ghasemshabani@ymail.com

³m.zalnejhad.313@gmail.com

⁴h.zalnejad@gmail.com