On The Prime theorem: x^6+1091 has no prime solutions

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Abstract: Using Jiang function we prove that x^6+1091 has no prime solutions.

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Shanks conjectured[1,2]:

Table 52.

$f(x)$	$f(m)$ is composite for all m up to
x^6+1091	3905
$x^6+82991$	7979
$x^{12}+4094$	170624
$x^{12}+488669$	616979

The smallest prime value of the last polynomial has no less than 70 digits.

Theorem 1.

$$(P+1)^6+1091 \quad (1)$$

has no prime solutions

Proof. We have Jiang function[3]

$$J_2(\omega)=\prod_P[P-1-\chi(P)], \quad (2)$$

where $\omega=\prod_P P$,

$\chi(P)$ is the number of solutions of congruence

$$(q+1)^6+1091\equiv 0 \pmod P \quad (3)$$

$$q=1,\cdots,P-1.$$

From (3) we have $\chi(2)=0$, $\chi(3)=2$, $\chi(5)=2$, $\chi(7)=6$.

Substituting it into (2) we have

$J_2(3)=0$, $J_2(7)=0$.

We have prove that (1) has no prime solutions.

In the same way we prove that $x^6+82991$ has no prime solutions.

Theorem 2.

$$P^{12}+4094 \quad (4)$$

has no prime solutions

Proof. We have Jiang function [3]

$$J_2(\omega)=\prod_P[P-1-\chi(P)], \quad (5)$$

$\chi(P)$ is the number of solutions of congruence

$$q^{12}+4094\equiv 0 \pmod P, \quad (6)$$

$$q=1,\cdots,P-1.$$

From (6) we have

$$\chi(5)=4, \quad \chi(13)=12 \quad (7)$$

Substituting it into (5) we have $J_2(5)=0, J_2(13)=0$. We prove (4) has no prime solutions.

In the same way we are able to prove $x^{12}+488669$ has no prime solutions

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Reference

1. D. Shanks, A low density of primes. J. Recr. Math., 4(1971)272-275.
2. P. Ribenboim, The New book of prime Number Records, 3rd edition Springer-Verlag, New York, NY, 1995, pp401.
3. Chun-Xuan Jiang, Jiang's function $J_{n+1}(\omega)$ in prime distribution. http://www. wbabin.net/math /xuan2. pdf.
4. Chun-Xuan Jiang. **Automorphic Functions And Fermat's Last Theorem (1).** *Rep Opinion* 2012;4(8):1-6]. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/001_10009report0408_1_6.pdf.
5. Chun-Xuan Jiang. **Jiang's function** $J_{n+1}(\omega)$ **in prime distribution.** *Rep Opinion* 2012;4(8):28-34]. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/007_10015report0408_28_34.pdf.
6. Chun-Xuan Jiang**. The Hardy-Littlewood prime *k*-tuple conjecture is false.** *Rep Opinion* 2012;4(8):35-38]. (ISSN: 1553-9873). http://www.sciencepub.net/report/report0408/008_10016report0408_35_38.pdf.
7. Chun-Xuan Jiang. **A New Universe Model.** *Academ Arena* 2012;4(7):12-13] (ISSN 1553-992X). http://sciencepub.net/academia/aa0407/003_10067aa0407_12_13.pdf.
8. Chun-Xuan Jiang. **On The Prime theorem:** x^6+1091 has no prime solutions**.** *Academ Arena* 2015;7(1s): 9-10. (ISSN 1553-992X). http://www.sciencepub.net/academia. 8.
9. http://www.google.com. 2017.
10. http://www.yahoo.com. 2017.
11. http://www.baidu.com. 2017.
12. http://www.sciencepub.net. 2017.

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