

## On the twin Prime Numbers

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Prime numbers =  $P_n = 4 \times 10^n + 1$  , (  $n = 2k + 1$ , and  $n \neq 5 + 6k$ ,  $k = 0, 1, 2, 3, 4, \dots, \infty$ ),

when  $P_n + 2$ ,

$P_1 = 4 \times 10 + 1 + 2 = 4 \times 10 + 3 = 43$  , and 43 is a prime number,

$P_2 = 4 \times 10^2 + 1 + 2 = 4 \times 10^2 + 3 = 403 = 13 \times 31$  , so that 403 is an odd number,

$P_3 = 4 \times 10^3 + 1 + 2 = 4 \times 10^3 + 3 = 4003$  , and 4003 is a prime number,

$P_4 = 4 \times 10^4 + 1 + 2 = 4 \times 10^4 + 3 = 40003$  , and 40003 is a prime number,

$P_5 = 4 \times 10^5 + 1 + 2 = 4 \times 10^5 + 3 = 400003$  , and 400003 is a prime number,

$P_6 = 4 \times 10^6 + 1 + 2 = 4 \times 10^6 + 3 = 4000003 = 7 \times 571429$  , so that 4000003 is an odd number,

...

in the end, when  $n = 2k + 1$ , (  $k = 0, 1, 2, 3, 4, \dots, \infty$ ),

$4 \times 10^n + 3$  are the prime numbers.

But , when  $n = 2k + 1$ , and  $n \neq 5 + 6k$ , (  $k = 0, 1, 2, 3, 4, \dots, \infty$ ),

$4 \times 10^n + 3$  and  $4 \times 10^n + 1$  are the twin prime numbers.

So,

(  $4 \times 10^n + 3$  ) - (  $4 \times 10^n + 1$  ) = 2,  $n = 2k + 1$ , and  $n \neq 5 + 6k$ , (  $k = 0, 1, 2, 3, 4, \dots, \infty$ ).