

题目链接:<https://projecteuler.net/problem=216>

题意

求 $\#\{n \in \mathbb{N} \mid n \leq 5e7, \exists k \in \mathbb{N} \text{ 使得 } t(n) = 2n^2 - 1 \text{ 是个质数}\}$

题解

要证明几个关于 $t(n) = 2n^2 - 1$ 的性质: 1、若 $p \mid t(n)$ 则 $p \mid t(n+kp)$ 且 $p \mid t(-n+kp)$

证明:
$$t(n+p) - t(n) = 2(n+p)^2 - 2n^2 = 2p(2n+p)$$
 所以
若 $p \mid t(n)$ 因为 $p \mid (t(n+p) - t(n))$ 所以有 $p \mid t(n+p)$ 从而有 $p \mid t(n+kp)$

$p \mid t(-n+kp)$ 同理

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Last update: **2020/05/25 16:38**