Proof that the Legendre conjecture is unprovable

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Abstract

In this paper, we attempt to prove the unprovability of the Legendre Conjecture, a known open problem. I use the unprovability that is shown in my paper 'Guessing that the Riemann Hypothesis is unprovable using Non-Standard Analysis"..

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Harold Cramer ([1]) has shown that the Riemann Hypothesis implies that

$$p_{n+1} - p_n = O(\sqrt{p_n} \log p_n)$$

Even if the Riemann Hypothesis is true, it may not be possible to prove the Legendre Conjecture for large p_n. My paper ([2]) suggests that the Riemann Hypothesis is unprovable, and therefore the Legendre Conjecture may also be unprovable.

References

[1] "On the order of magnitude of the difference between consecutive prime numbers"; Cramer, Harold, Acta arithmetica 2; 23-46

[2] "Guessing that the Riemann Hypothesis is unprovable using Non-Standard Analysis", T.Nakashima vixra.org