Proof of All Out Primes~Definition~

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$$P_{(n)} = \quad \text{nth prime}$$

$$\lim_{n\to\infty}\left(n-\sqrt{n^2-P_{(n)}}\right)=\lim_{n\to\infty}\left(\frac{1}{2}\left(\ln\left(P_{(n)}\right)-1\right)\right)\cdots ①$$

Pierre Dusart

$$n\left(\ln n+\ln\left(\ln n\right)-1\right)<P_{(n)}<n\left(\ln n+\ln\left(\ln n\right)\right)\because n>6$$

$$n\to\infty$$

$$-2\left(\ln\left(-2\right)+\ln\left(\ln\left(-2\right)\right)-1\right)<P_{(\infty)}<-2\left(\ln\left(-2\right)+\ln\left(\ln\left(-2\right)\right)\right)$$

$$-2\left(1+\ln 1-1\right)<P_{(\infty)}<-2\left(1+\ln 1\right)$$

$$-2\times 0<P_{(\infty)}<-2$$

$$0<P_{(\infty)}<-2$$

$$3<P_{(\infty)}<5$$

$$\therefore P_{(\infty)}=4\left(=\pi=e^2=i^2\right)$$

$$① \to \left(-2\right)-\sqrt{\left(-2\right)^2-4}=\left(-2\right)-\sqrt{4-4}=-2$$

$$\to \frac{1}{2}\left(\ln 4-1\right)=\frac{1}{2}\left(2-1\right)=\frac{1}{2}=\frac{-4}{2}=-2$$

That's all (proof end)