

ON PRIME NUMBERS XI

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$$\lim_{N \rightarrow \infty} \ln \left(\prod_{n=1}^N \frac{e}{\left(1 + \frac{1}{P_n}\right)^{P_n}} \right) = \lim_{N \rightarrow \infty} \sum_{n=1}^N \ln \left(\frac{e}{\left(1 + \frac{1}{P_n}\right)^{P_n}} \right) = \lim_{N \rightarrow \infty} (\ln \sqrt{\ln P_N})$$
$$\lim_{N \rightarrow \infty} \left(\ln \left(\prod_{n=1}^N P_n \right) \right) = \lim_{N \rightarrow \infty} \left(\sum_{n=1}^N \ln P_n \right) = \lim_{N \rightarrow \infty} P_N$$



$$\frac{e}{\left(1 + \frac{1}{P_n}\right)^{P_n}} \Leftrightarrow P_n = \ln \sqrt{\ln P_N} \Leftrightarrow P_N$$