

Q-1) Find $\lim_{n \rightarrow \infty} a_n$, where $a_n = (\ln n)^{1/\ln n}$, $n = 2, 3, \dots$

Solution:

You can consider $\ln a_n = \frac{\ln(\ln n)}{\ln n}$ and use L'Hopital's rule as $n \rightarrow \infty$. This will give

$$\lim_{n \rightarrow \infty} a_n = 1$$