

Put these sequences in order by increasing rate of growth.

Solution:

$$\ln(\ln n) \ll \ln n \ll \ln(n^2) \ll (\ln n)^2 \ll \sqrt[3]{n} \ll \sqrt{n} \ll \frac{n}{\ln n} \ll n \ll e^{\ln n} \ll n \ln n \ll n^2 \ll n^2 \ln n \ll e^n \ll n! \ll n^n$$

Y O U R u L E I T S r i G H t

Put these sequences in order by increasing rate of decay.

Solution:

$$\frac{1}{\ln(\ln n)} \gg \frac{1}{\ln n} \gg \frac{1}{\ln(n^2)} \gg \frac{1}{(\ln n)^2} \gg \frac{1}{\sqrt[3]{n}} \gg \frac{1}{\sqrt{n}} \gg \frac{\ln n}{n} \gg \frac{1}{n} \gg \frac{1}{e^{\ln n}} \gg \frac{1}{n \ln n} \gg \frac{1}{n^2} \gg \frac{1}{n^2 \ln n} \gg \frac{1}{e^n} \gg \frac{1}{n!} \gg \frac{1}{n^n}$$

N I C E W O R K r i G H T o n