

$$\sum \frac{1}{n + \ln(n)} = \infty$$

$$\sum \frac{2 + \cos(n)}{n + \ln(n)} = \infty$$

$$\frac{\frac{1}{n + \ln(n)}}{\frac{1}{n + n}} \rightarrow 1$$

$$\sum_{n=0}^{\infty} \frac{1}{q^n} = 1 + \frac{1}{q} + \dots + \frac{1}{q^k} = S$$

$$q + 1 + \frac{1}{q} + \dots + \frac{1}{q^{k-1}} = qS$$

$$q - \frac{1}{q^k} = S \quad (q-1)$$

$$\frac{q^k}{q-1} - \frac{1}{(q-1)q^k} = S \xrightarrow{k \rightarrow \infty} S = \frac{q}{q-1} - \frac{1}{q-1} = \frac{2}{1}$$



$$\sum_{n=0}^{\infty} \frac{1}{2^n} = 2$$

