

$$a_k = (\ln(x))^k$$

For which values of  $x$  will  $\lim_{k \rightarrow \infty} (a_k)$  converge?

$$\lim_{n \rightarrow \infty} \sqrt[n]{n}$$

$$\lim_{n \rightarrow \infty} \left( 1 + \frac{x}{n} \right)^n$$

$$\lim_{n \rightarrow \infty} \frac{x^n}{n!}$$

$$\lim_{n \rightarrow \infty} \left( n \sin \left( \frac{1}{n} \right) \right)$$

$$\sum_{k=0}^{\infty} \frac{2^k}{3^k + 4^k}$$

$$\sum_{n=1}^{\infty} \left( \frac{1}{2} \right)^n$$

$$\sum_{k=0}^{\infty} \frac{1}{k!}$$



$$\sum_{k=0}^{\infty} \frac{1}{k}$$

Write an infinite series representation for  $\frac{1}{1-x}$

given that  $-1 < x < 1$