

1. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k} = 0$;
2. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^2} = 0$;
3. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^3} = 0$;
4. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \frac{1}{k^4} = 0$;