

Limit



Evaluate:

1. $\lim_{n \rightarrow \infty} \left[\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \dots + \frac{1}{n \times (n+1)} \right]$
2. $\lim_{n \rightarrow \infty} \left[\frac{1}{2^2-1} + \frac{1}{3^2-1} + \dots + \frac{1}{n^2-1} \right]$
3. $\lim_{n \rightarrow \infty} \left(1 - \frac{1}{4} \right) \left(1 - \frac{1}{9} \right) \times \dots \times \left(1 - \frac{1}{n^2} \right)$
4. $\lim_{n \rightarrow \infty} \frac{a^n + b^n}{a^{n+1} + b^{n+1}}$
5. $\lim_{n \rightarrow \infty} \left[\sqrt[3]{2n+1} - \sqrt[3]{2n-1} \right]$
6. $\lim_{n \rightarrow \infty} \left[\frac{1}{n^2} + \frac{1}{(n+1)^2} + \dots + \frac{1}{(2n)^2} \right]$
7. $\lim_{n \rightarrow \infty} \left[\frac{\sqrt{1} + \sqrt{2} + \dots + \sqrt{n-1}}{n\sqrt{n}} \right]$
8. $\lim_{n \rightarrow \infty} \left[\frac{1}{\sqrt{n^2+1}} + \frac{1}{\sqrt{n^2+2}} + \dots + \frac{1}{\sqrt{n^2+n}} \right]$
9. $\lim_{n \rightarrow \infty} \left[\frac{1 \times 3 \times 5 \times \dots \times (2n-1)}{2 \times 4 \times 6 \times \dots \times (2n)} \right]$