

## Знайти границю числової послідовності:

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

19.  $\lim_{n \rightarrow \infty} \frac{n+1}{n}$ .
20.  $\lim_{n \rightarrow \infty} \frac{(n+1)^2}{2n^2}$ .
21.  $\lim_{n \rightarrow \infty} \frac{(n+1)^3 - (n-1)^3}{(n+1)^2 + (n-1)^2}$ .
22.  $\lim_{n \rightarrow \infty} \frac{n^3 - 100n^2 + 1}{100n^2 + 15n}$ .
23.  $\lim_{n \rightarrow \infty} \frac{1000n^3 + 3n^2}{0,001n^4 - 100n^3 + 1}$ .
24.  $\lim_{n \rightarrow \infty} \frac{\sqrt[3]{n^2 + n}}{n+1}$ .
25.  $\lim_{n \rightarrow \infty} \frac{(\sqrt{n^2 + 1} + n)^2}{\sqrt[3]{n^6 + 1}}$ .
26.  $\lim_{n \rightarrow \infty} \frac{\sqrt{n^3 - 2n^2 + 1} + \sqrt[3]{n^4 + 1}}{\sqrt[4]{n^6 + 6n^5 + 2} - \sqrt[5]{n^7 + 3n^3 + 1}}$ .
27.  $\lim_{n \rightarrow \infty} \frac{\sqrt[4]{n^5 + 2} - \sqrt[3]{n^2 + 1}}{\sqrt[5]{n^4 + 2} - \sqrt{n^3 + 1}}$ .
28.  $\lim_{n \rightarrow \infty} \frac{n!}{(n+1)! - n!}$ .
29.  $\lim_{n \rightarrow \infty} \frac{(n+2)! + (n+1)!}{(n+3)!}$ .
30.  $\lim_{n \rightarrow \infty} \frac{(n+2)! + (n+1)!}{(n+2)! - (n+1)!}$ .