

Limiti di successione

Calcolare i limiti seguenti:

1. $\lim_n \frac{(-1)^n \cos^2 n}{n};$

2. $\lim_n \frac{1 + (a - 1)n^3 - n \sin n + n^2 \sin(1/n)}{\log^4 n + \sqrt{n^2 + 1}} \quad (a \neq 1);$

3. $\lim_n \frac{4^n + a^n}{n^2 2^n + 5^n} \quad (a > 0);$

4. $\lim_n \frac{n^2 + e^{n \sin n} + 2^{\frac{1}{3}n \log n}}{n^5 - n^5 \sin n + n^{n^{3/2}}}.$

5. $\lim_n \frac{n^n}{e^{n^2}}.$

6. $\lim_n \frac{n^a - \cos n}{3n^2 - n^2 \sin(n^3) + \sin(\sqrt{n})},$ per $a = 1$ e per $a = 3$.

7. $\lim_n \frac{n^{\sqrt{n}} + (\sqrt{n})^n}{2^{n+\sqrt{n}}}.$

8. $\lim_n \left(1 + \frac{1}{\sqrt{n}}\right)^{(n^{1/3} \sin n + (-1)^n)}.$