Analisi Matematica 1- Lista n. 8
Limiti su Confronti tra Infiniti
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I seguenti limiti possono essere calcolati senza usare teoremi non ancora disponibili nelle prime settimane del corso di Analisi Matematica 1, in particolare **SENZA** gli sviluppi di **TAYLOR** e **SENZA** la formula di **STIRLING.**

1) $\lim\limits_{n \to +\infty} \sqrt[n]{8^n + 3^n}$

2) $\lim\limits_{n \to +\infty} \sqrt[n]{n^n + 1}$

3) $\lim\limits_{n \to +\infty} \left(\dfrac{1}{\sqrt[n]{8}} + \dfrac{1}{\sqrt[n]{3}} \right)^n$

4) $\lim\limits_{n \to +\infty} \left(\sqrt[n]{8} - \sqrt[n]{3} \right)^n$

5) $\lim\limits_{n \to +\infty} \dfrac{2^{n + \sin n} + 3^{n-1}}{100^{\sqrt{n}} + \left(3 + \frac{1}{n}\right)^n}$

6) $\lim\limits_{n \to +\infty} \dfrac{8^{\sqrt{n}} + \sqrt{4^n - 1}}{2^n - 3^{\frac{n + \sin n}{2}}}$

7) $\lim\limits_{n \to +\infty} \dfrac{2^{n+1} + n^2 \, 4^{\ln n} - 2^{n-3}}{\sqrt{4^n + 3} + \sqrt{3^n + 4}}$

8) $\lim\limits_{n \to +\infty} \dfrac{(n + \sin n)^{10} + n^9 \ln n}{n^{10} + \sqrt{n^{20} + 1} + \ln(1 + n^{100})}$

9) $\lim\limits_{n \to +\infty} \dfrac{2 \cdot n^{3n} + 7n \cdot (2n)! + 1000^n}{10^{3n} - (2n+1)! + (n+1)^{3n}}$

10) $\lim\limits_{n \to +\infty} \dfrac{(n^2+1)\sqrt{n} + 3n^2 - \sqrt{n^5 + 1}}{\ln^2(n + e^n) + \sqrt[n]{n! + 1}}$

11) $\lim\limits_{n \to +\infty} \dfrac{(n+1)^{n + \frac{1}{n}} + n!}{(n+2)^n - n^n}$

12) $\lim\limits_{n \to +\infty} \dfrac{\left(\sqrt{n^n} + n^{\sqrt{n}} + (\sqrt{n})^n \right)^2}{(n+1)^n}$

13) $\lim\limits_{n \to +\infty} \dfrac{\left(2^n \cdot n! + n^n \right)^2}{(2n)! + (n+1)^{2n}}$

14) $\lim\limits_{n \to +\infty} \left(\dfrac{n^{n+1} + n}{n^{n+1} + \sqrt{n}} \right)^{(n+1)^n}$

15) $\lim\limits_{n \to +\infty} \dfrac{\left(1 + \frac{1}{n}\right)^{n!} + 2^{n!}}{\left(2 - \frac{1}{n^2}\right)^{n!} + \left(2 + \frac{1}{n!}\right)^{n!}}$

16) $\lim\limits_{n \to +\infty} \dfrac{(n!)^{n+1} + \left((n+1)!\right)^n}{\left((n+1)!\right)^{n + \frac{1}{n}} + \left((n-1)!\right)^{n+2}}$

17) $\lim\limits_{n \to +\infty} \left(\left((n+9)^{100} + n^{98} \ln(n!) - n^{100} \right) \cdot \left(\sqrt{n^{199} + 1} - \sqrt{n^{199} - 1} \right) \right)$