Limiti di successioni

Calcolare $\lim_{n\to\infty} a_n$, ove a_n è definito come segue:

1. $a_n = \dfrac{(n-2n^2+1)(2n^3+3)}{2n^3+n^2+n^4+1}$; $[-\infty]$
2. $a_n = \dfrac{7n^2-n+2}{\sqrt{4n^4+6n-5}}$; $\left[\dfrac{7}{2}\right]$
3. $a_n = \dfrac{\sqrt{n+1}}{\sqrt{n^2+n+1}-\sqrt{n}}$; $[0]$
4. $a_n = \dfrac{\sqrt{n^2+1}+\sqrt{n}}{\sqrt[4]{n^3+n}-\sqrt{n}}$; $[+\infty]$
5. $a_n = \dfrac{\left(\sqrt{n^3+1}-\sqrt[3]{n^2+3}\right)(n^2+1)}{n^3+3}$; $[+\infty]$
6. $a_n = \dfrac{n(n+1)^{-\frac{1}{2}}+\sqrt[3]{n+2}}{\sqrt{n^2+n+1}+1}$; $[0]$
7. $a_n = \sqrt[3]{n+1}-\sqrt[3]{n}$; $[0]$
8. $a_n = \sqrt[4]{n^3+1}\left(\sqrt[3]{n^2+1}-\sqrt[3]{n^2+3}\right)$; $[0]$
9. $a_n = \dfrac{\sqrt{n+1}-\sqrt{n}}{\sqrt[3]{n+1}-\sqrt[3]{n}}$; $[+\infty]$
10. $a_n = \dfrac{\sqrt{2n+1}-\sqrt{n}}{\sqrt{2n+1}+\sqrt{n}}$; $[3-2\sqrt{2}]$
11. $a_n = \dfrac{\sqrt{n+1}-\sqrt{n}}{\sqrt{n+1}+\sqrt{n}}$; $[0]$
12. $a_n = \left(\sqrt{n+1}-\sqrt{n+7}\right)(8\sqrt{n}+1)$; $[-24]$
13. $a_n = \ln n - 3\sqrt{n}$; $[-\infty]$
14. $a_n = \dfrac{2^n+\ln^3 n+2}{n^3+e^n+2}$; $[0]$
15. $a_n = \dfrac{(-1)^n\sqrt{n}+2n}{n^{-3}+\ln n-n}$; $[-2]$

16. $a_n = \dfrac{e^{-n}\cos n + 2n^2}{n^3 + \ln n}$; $[0]$

17. $a_n = \dfrac{n\,2^{-n} + n}{3n + \sqrt[3]{n}}$; $\left[\dfrac{1}{3}\right]$

18. $a_n = \dfrac{7n^4 + (-1)^n}{\sqrt{n} + n^4 - 1}$; $[7]$

19. $a_n = \dfrac{4\ln n - \sqrt{n}}{\sqrt[3]{n} + 7}$; $[-\infty]$

20. $a_n = \dfrac{-n^5 + 4n + 2^{-\frac{n^2}{2}}}{2n^{-5} + (\log_5 n)^{\frac{1}{2}} + (-3)^{-n}}$; $[-\infty]$

21. $a_n = \dfrac{e^{3n}}{\sqrt{e^n} - \sqrt{e^n + e^{7n}}}$; $[0]$

22. $a_n = \dfrac{2^n + n^3 + (n+2)!}{4^n + (6n^2 + 5n + 1)n!}$; $\left[\dfrac{1}{6}\right]$

23. $a_n = \dfrac{e^{-n} + (n-1)! - 5^n + n^2}{e^{3n} - (5n^2 - 1)n! + n}$; $[0]$

24. $a_n = \dfrac{(n-1)! - 2^{-n} + e^{2n}}{(5n^3 + n - 4)(n+2)! + 4^{-n} + 1}$; $[0]$

25. $a_n = \dfrac{5(n+3)! + (5n+1)^2(n+2)! + 5^n}{(n+4)! - 5^n + n^2}$; $[25]$

26. $a_n = \dfrac{n5^{n+11} - 5^{11}n^{n-4} + n^{16}}{n^{n-4} + 16^n + 11n^{16}}$; $[-5^{11}]$

27. $a_n = \dfrac{n^3\big(e^n + 7(n+5)!\big)}{7^n + n^9 + 9n^5(n+3)!}$; $\left[\dfrac{7}{9}\right]$

28. $a_n = \dfrac{2^{n+2} + 3^{\frac{n}{2}}}{2^n + 3^{\frac{n+2}{2}}}$; $[4]$

29. $a_n = \dfrac{(n+1)! + n^4 - 3^{n+1}n!}{3^n n! + 4^n}$; $[-3]$

30. $a_n = \dfrac{n^n + \ln n + 6n! - e^{n+5}}{-e^n + 5n^n + 5n! + n^8}$; $\left[\dfrac{1}{5}\right]$

31. $a_n = \dfrac{n!(n^n - 5n^2 + 1) + 3^n}{9^n + (pn)! - 5n^3}\,, \quad p \in \mathbb{N}^*;$ $\left[\begin{array}{r} 0,\ \text{se } p \geq 2 \\ +\infty,\ \text{se } p = 1 \end{array}\right]$

32. $a_n = \dfrac{n^p - e^{pn} + (n+p)^n}{q^n + (n+q)!}\,, \quad p, q \in \mathbb{N};$ $[+\infty]$

33. $a_n = \dfrac{((pn)^n + 3^n)(n^{-1} + \ln n + n!) - e^{-n}}{n + (qn)! - ((q-1)n)!}\,, \quad p, q \in \mathbb{N}^*.$ $\left[\begin{array}{rl} 0,\ \text{se} & q > 2, \forall\, p \in \mathbb{N}^* \\ & q = 2,\, p = 1; \\ +\infty,\ \text{se} & q = 1, \forall\, p \in \mathbb{N}^* \\ & q = 2, \forall\, p \geq 2 \end{array}\right]$