

Determinare i punti di discontinuità

1. $f(x) = \frac{|x^2 - 16|}{x - 4}$ [x=4: I SP]
2. $f(x) = \frac{x^2 - x}{|x|}$ [x=0: I SP]
3. $f(x) = \frac{x^2 + 2x + 4}{x - 2}$ [x=2: II SP]
4. $f(x) = \frac{1}{\frac{1}{4 - 2x}}$ $\left[\begin{array}{l} x = 0: \text{ I SP} \\ x = \frac{1}{2}: \text{ II SP} \end{array} \right]$
5. $f(x) = \frac{x^2 + 2x - 3}{x^2 - 3x + 2}$ $\left[\begin{array}{l} x = 2 \text{ IISP} \\ x = 1: \text{ III SP} \end{array} \right]$
6. $f(x) = 3 + \log|x|$ [x=0: II SP]
7. $f(x) = \frac{1}{\frac{2x}{1 - e^{x+2}}}$ $\left[\begin{array}{l} x = -2 \text{ ISP} \\ x = 0: \text{ II SP} \end{array} \right]$
8. $f(x) = \frac{e^{2x} - 1}{3x} + \frac{x^2 - x}{3|1 - x|}$ $\left[\begin{array}{l} x = 0 \text{ IIIISP} \\ x = 1: \text{ I SP} \end{array} \right]$
9. $f(x) = \frac{x+1}{|x+1|} + \frac{2}{x}$ $\left[\begin{array}{l} x = 0 \text{ IISP} \\ x = -1: \text{ I SP} \end{array} \right]$
10. $f(x) = \frac{|x|}{x} \cdot 2^{x-1}$ $\left[\begin{array}{l} x = 0 \text{ ISP} \\ x = 1: \text{ II SP} \end{array} \right]$
11. $f(x) = \frac{1}{\frac{x-1}{1 - 2^x}}$ $\left[\begin{array}{l} x = 1 \text{ IISP} \\ x = 0: \text{ I SP} \end{array} \right]$
12. $f(x) = \frac{\sqrt{x+2} - 2}{x - 2}$ [x=2: III SP]
13. $f(x) = \log \left| \frac{2x-1}{x-4} \right|$ $\left[\begin{array}{l} x = \frac{1}{2} \text{ II SP} \\ x = 4: \text{ II SP} \end{array} \right]$
14. $f(x) = \frac{\sqrt{x+7} - 3}{x^2 - 4}$ $\left[\begin{array}{l} x = 2 \text{ IIIISP} \\ x = -2: \text{ II SP} \end{array} \right]$
15. $f(x) = \frac{x^2 + 5x + 6}{x^3 + 2x^2 + 4x + 8}$ [x=-2: III SP]
16. $f(x) = \log_2(x^2 + 2x) - \log_2(2x^2 + 3)$ $\left[\begin{array}{l} x = 0 \text{ IISP} \\ x = -2: \text{ II SP} \end{array} \right]$
17. $f(x) = \frac{\log_3 x}{1 - \log_3 x}$ $\left[\begin{array}{l} x = 0 \text{ IISP} \\ x = 3 \text{ II SP} \end{array} \right]$

Calcolare i seguenti limiti

18. $\lim_{x \rightarrow 0} \log \frac{x+1}{\frac{1}{2} x^2}$ $[-\infty]$
19. $\lim_{x \rightarrow 0} e^{\frac{2|x|}{x^2}}$ $[+\infty]$
20. $\lim_{x \rightarrow 2} \frac{\log_2 x}{2^{2x} - 2^x - 2}$ $\left[\frac{1}{10} \right]$
21. $\lim_{x \rightarrow 3} \frac{\log(x^2 - 2x - 2)}{x^2 + x - 1}$ [0]
22. $\lim_{x \rightarrow +\infty} (\sqrt{1+2x} - \sqrt{3+2x})$ [0]
23. $\lim_{x \rightarrow -\infty} \frac{x+1}{|x|-1}$ [-1]
24. $\lim_{x \rightarrow +\infty} \frac{x-1}{|x|+1}$ [1]
25. $\lim_{x \rightarrow 0} \frac{x^3 + 3x + 4x^2}{x^4 - 2x^3}$ $[-\infty]$
26. $\lim_{x \rightarrow 4} \frac{\sqrt{x} - 2}{x^2 - 16}$ $\left[\frac{1}{32} \right]$
27. $\lim_{x \rightarrow 0} \frac{x^2 - 5}{e^x + e^{-x}}$ $\left[-\frac{5}{2} \right]$
28. $\lim_{x \rightarrow +\infty} [\log_2(x^2 + 2x) - \log_2(2x^2 + 3)]$ [-1]
29. $\lim_{x \rightarrow +\infty} e^{\frac{x+2}{x-1}}$ [e]
30. $\lim_{x \rightarrow 1} e^{\frac{x+2}{x-1}}$ $[+\infty; 0]$
31. $\lim_{x \rightarrow -\infty} \frac{e^{3x} + 2}{e^{2x} - 1}$ [-2]
32. $\lim_{x \rightarrow +\infty} \frac{e^{3x} + 2e^x}{e^{4x} - e^x}$ [0]
33. $\lim_{x \rightarrow +\infty} \frac{(x+1)^{\sqrt{5}}}{e^{-x}}$ $[+\infty]$
34. $\lim_{x \rightarrow +\infty} \log \frac{1}{x+2}$ $[-\infty]$