

Asintoti

Determinare gli eventuali asintoti delle seguenti funzioni, precisando se si tratta di asintoti completi, asintoti destri o asintoti sinistri:

1. $y = \frac{1}{(x+2)^3}$. $[x = -2; y = 0]$
2. $y = e^{\frac{1}{x}} - 1$. $[x = 0; y = 0]$
3. $y = 2x - \frac{\cos x}{x}$. $[x = 0; y = 2x]$
4. $y = \frac{\ln^2 x}{x} - 3x$. $[x = 0; y = -3x]$
5. $y = \frac{x}{2} + \operatorname{arctg} x$. $\left[y = \frac{1}{2}x + \pi; y = \frac{1}{2}x \right]$
6. $y = x - 2 + \frac{x^2}{\sqrt{x^2 + 9}}$. $[y = -2; y = 2x - 2]$
7. $y = \frac{x^2 + 1}{\sqrt{x^2 - 1}}$. $[x = \pm 1; y = \pm x]$
8. $y = \frac{1}{1 - e^x}$. $[x = 0; y = 0; y = 1]$
9. $y = p + \frac{a^3}{(x - q)^2}$. $[x = q; y = p]$
10. $y^3 = 6x^2 + x^3$. $[y = x + 2]$
11. $y^2 = \frac{x^3}{2a - x}$. $[x = 2a]$
12. $y^2(x - 2a) = x^3 - a^3$. $[x = 2a; y = \pm(x + a)]$
13. $y = e^{-2x} \operatorname{sen} x$. $[y = 0]$
14. $y^3 = a^3 - x^2$. $[Non\ esistono\ asintoti]$
15. $y = x \ln \left(e + \frac{1}{x} \right)$. $\left[x = -\frac{1}{e}; y = x + \frac{1}{e} \right]$
16. $y^2(x^2 + 1) = x^2(x^2 - 1)$. $[y = \pm x]$
17. $y = -x \operatorname{arctg} x$. $\left[y = \frac{\pi}{2}x + 1; y = -\frac{\pi}{2}x + 1 \right]$