

Calcolare le derivate seconde delle seguenti funzioni:

1. $\sin^2 x$ 2. $\sin(x^2)$ 3. $\cos^2 x$ 4. $\cos(x^2)$ 5. $\operatorname{tg}(\log x)$ 6. $\operatorname{arctg}^3 x$ 7. $\operatorname{arctg}(x^4)$ 8. $\log^7 x$
9. $\operatorname{arcsen}^4 x$ 10. $\operatorname{arctg}^4 x$ 11. $\operatorname{arctg}(x^2)$ 12. e^{x^2} 13. e^{xe^x} 14. $\operatorname{tg}(e^x)$ 15. $x \log(x^2 + 1)$
16. $x^2 \operatorname{arctg} x$ 17. $\sin(\log^2 x + 1)$ 18. $\sin(\log^2 x)$ 19. $e^{\operatorname{tg} x}$ 20. $e^{\operatorname{arctg}(x^2)}$ 21. $\frac{\sin x}{\sqrt{x}}$
22. $\frac{\sin(\sqrt{x})}{x}$ 23. $\frac{\log(2x + 1)}{x^2}$ 24. $\frac{x^2}{\log x}$ 25. $\frac{1}{\sqrt{\arccos x}}$ 26. $\frac{\operatorname{tg} x}{1 + \operatorname{tg} x}$

Risposte:

1. $2(\cos^2 x - \operatorname{sen}^2 x) = 2 \cos(2x)$ 2. $2(\cos(x^2) - 2x^2 \operatorname{sen}(x^2))$ 3. $-2(\cos^2 x - \operatorname{sen}^2 x) = -2 \cos(2x)$
4. $-2(\operatorname{sen}(x^2) + 2x^2 \cos(x^2))$ 5. $-\frac{\cos(\log x) - 2\operatorname{sen}(\log x)}{x^2 \cos^3(\log x)}$ 6. $-\frac{6\operatorname{arctg}x(x\operatorname{arctg}x - 1)}{(x^2 + 1)^2}$
7. $\frac{4x^2(3 - 5x^8)}{(x^8 + 1)^2}$ 8. $-\frac{7(\log x - 6)\log^5 x}{x^2}$ 9. $\frac{4\operatorname{arcsen}^2 x(3\sqrt{1 - x^2} + x\operatorname{arcsen}x)}{(1 - x^2)^{3/2}}$
10. $\frac{4\operatorname{arctg}^2 x(3 - 2x\operatorname{arctg}x)}{(x^2 + 1)^2}$ 11. $\frac{2 - 6x^4}{(x^4 + 1)^2}$ 12. $2e^{x^2}(2x^2 + 1)$ 13. $e^{e^x x + x}(e^x(x + 1)^2 + x + 2)$
14. $\frac{e^x(1 + 2e^x \operatorname{tg}(e^x))}{\cos^2(e^x)}$ 15. $\frac{2x(x^2 + 3)}{(x^2 + 1)^2}$ 16. $\frac{2(x(x^2 + 2) + (x^2 + 1)^2 \operatorname{arctg}x)}{(x^2 + 1)^2}$
17. $\frac{-4\log^2 x \operatorname{sen}(\log^2 x + 1) - 2(\log x - 1)\cos(\log^2 x + 1)}{x^2}$
18. $\frac{-4\log^2 x \operatorname{sen}(\log^2 x) - 2(\log x - 1)\cos(\log^2 x)}{x^2}$ 19. $\frac{e^{\operatorname{tg}x}(1 + 2\cos x \operatorname{sen}x)}{\cos^4 x}$
20. $-\frac{2(3x^4 - 2x^2 - 1)e^{\operatorname{arctg}(x^2)}}{(x^4 + 1)^2}$ 21. $\frac{(3 - 4x^2)\operatorname{sen}x - 4x\cos x}{4x^{5/2}}$
22. $-\frac{(x - 8)\operatorname{sen}(\sqrt{x}) + 5\sqrt{x}\cos(\sqrt{x})}{4x^3}$ 23. $\frac{6(2x + 1)^2 \log(2x + 1) - 4x(5x + 2)}{x^4(2x + 1)^2}$
24. $\frac{2\log^2 x - 3\log x + 2}{\log^3 x}$
25. $\frac{3\sqrt{1 - x^2} + 2x \operatorname{arccos} x}{4(1 - x^2)^{3/2}(\operatorname{arccos} x)^{5/2}}$ 26. $\frac{2(\operatorname{tg}x - 1)}{\cos^2 x(\operatorname{tg}x + 1)^3}$