

1 1D derivatives

1. $(\frac{1}{3}x^4 + x - 1)'$

2. $((2x^2 + 3)^3)'$

3. $(\sqrt{x^2 + 4})'$

4. $(x^2\sqrt{x+1})'$

5. $(x^3 + \sin x + e^{x^2})'$

6. $(e^{x^2 \sin x})'$

7. $(3^{x^2+3x})'$

8. $(x^3 \frac{x^2 + e^{\sin x}}{x^2 + 1})'$

9. $(x^{x^2})'$

10. $(\sin x \cdot \cos x)'$

11. $(\sqrt{\frac{x-1}{x+1}})'$

12. $(x^2 \cdot \sqrt{\frac{\sin x}{2+\sin x}})'$

13. $(e^{2x})^{(10)}$

14. $(\cos x)^{(11)}$

15. $(x^{12} + 5x^4)^{(6)}$

16. $(\ln x)^{(12)}$

Results: 1, $\frac{4}{3}x^3 + 1$, 2, $12(2x^2 + 3)^2x$, 3, $\frac{x}{\sqrt{x^2+4}}$, 4, $2x\sqrt{x+1} + \frac{x^2}{2\sqrt{x+1}}$, 5, $3x^2 + \cos x + 2xe^{x^2}$, 6, $e^{x^2 \sin x}(2x \sin x + x^2 \cos x)$, 7, $\ln 3 \cdot 3^{x^2+3x}(2x+3)$, 8, $3x^2 \frac{x^2 + e^{\sin x}}{x^2 + 1} + x^3 \frac{(2x + e^{\sin x} \cos x)(x^2 + 1) - (x^2 + e^{\sin x})(x^2 + 1)}{(x^2 + 1)^2}$, 9, $x^{x^2}(x + 2x \ln x)$, 10, $\cos 2x$, 11, $\frac{1}{2} \sqrt{\frac{x+1}{x-1}} \frac{2}{(x+1)^2}$, 12, $2x \sqrt{\frac{\sin x}{2+\sin x}} + x^2 \frac{1}{2} \sqrt{\frac{2+\sin x}{\sin x}} \frac{\cos x(2+\sin x) - \sin x \cos x}{(2+\sin x)^2}$, 13, $1024e^{2x}$, 14, $-\sin x$, 15, $\frac{12!}{6!}x^6$, 16, $-11!x^{-12}$