Table of derivatives

1. $C`=0$
2. $x`=1$
3. $(x^2)`=2x$
4. $(x^n)`=nx^{n-1}$

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5. $(a^x)`=a^x \ln a$
6. $(e^x)`=e^x$
7. $(\log_a x)`=\frac{1}{x \ln a}$ (here is $x>0$ and $a>0$)
8. $(\ln x)`=\frac{1}{x}$ $(x>0)$
9. $\left(\frac{1}{x}\right)` = -\frac{1}{x^2}$ $(x \neq 0)$
10. $\sqrt{x}`=\frac{1}{2\sqrt{x}}$ $(x>0)$

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11. $(\sin x)`=\cos x$
12. $(\cos x)`= -\sin x$
13. $(\operatorname{tg} x)`=\frac{1}{\cos^2 x}$ $x \neq \frac{\pi}{2}+k\pi$
14. $(\operatorname{ctg} x)`=-\frac{1}{\sin^2 x}$ $x \neq k\pi$

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15. $(\arcsin x)`=\frac{1}{\sqrt{1-x^2}}$ $|x|<1$
16. $(\arccos x)`= -\frac{1}{\sqrt{1-x^2}}$
17. $(\operatorname{arctg} x)`= \frac{1}{1+x^2}$
18. $(\operatorname{arcctg} x)`= -\frac{1}{1+x^2}$

General differentiation rules:

1. **$[cf(x)]`=cf`(x)$**
2. **$[f(x) \pm g(x)]` = f`(x) \pm g`(x)$**

} **Linearity**

3. **$(u \circ v)`=u`v + v`u$** **Product rule**
4. $\left(\frac{u}{v}\right)` = \frac{u`v - v`u}{v^2}$ **Quotient rule**