Derivatives		
Average rate of change between two points	Slope of the Secant Line $\left[a,b\right]$	$SSL = rac{f(b) - f(a)}{b - a}$
Rate of change at a point	$f'(x_0) = \lim_{x o x_0} rac{f(x) - f(x_0)}{x - x_0}$	$f'(x_0) = \lim_{h o 0} rac{f(x_0 + h) - f(x_0)}{h}$
Constant	a'=0	$\operatorname{ex} : \mathbf{4'} = 0$
Multiplication by constant	(mx)'=m	$\operatorname{ex}:(3x)'=3$
Power Rule	$(u^n)'=n imes u^{n-1} imes u'$	ex : $\left((6x)^5\right)'=5(6x)^4 imes (6x)'=5(6x)^4 imes 6$
Root	$(\sqrt[n]{u})' = \frac{u'}{n \times \sqrt[n]{u^{n-1}}}$	ex : $(\sqrt{2x})'=rac{(2x)'}{2 imes\sqrt{2x}}=rac{1}{\sqrt{2x}}$
Exponential	$(a^u)'=u' imes a^u imes \ln a$	ex : $\left(7^{3x}\right)'=3 imes7^{3x} imes\ln7$
Exponential base e	$(e^u)'=u' imes e^u$	ex: $\left(e^{2x} ight)'=2 imes e^{2x}$
Sum Rule	(u+v)'=u'+v'	ex : $(2x+5)'=(2x)'+5'=2$
Product Rule	$(u \times v)' = u'v + uv'$	ex: $\left(x^2 imes e^x ight)=\left(x^2 ight){}'e^x+x^2(e^x)'=2xe^x+x^2e^x$
Quotient Rule	$\left(rac{u}{v} ight)'=rac{u'v-uv'}{v^2}$	ex: $\left(rac{x+1}{2x} ight)'=rac{(x+1)' imes(2x)-(x+1) imes(2x)}{(2x)^2}$
Chain Rule	(gof)'=g'(f) imes f'	ex: $g(x)=2x^2; g'(x)=4x; f(x)=2x; f'(x)=2 \ (gof)'=4(2x) imes 2$
Sine	$(\sin u)' = u' imes \cos u$	ex : $(\sin(6x))' = 6 imes \cos(6x)$
Cosine	$(\cos u)' = -u' imes \sin u$	ex : $(\cos(3x))' = -3 imes \sin(3x)$
Tangent	$(an u)' = rac{u'}{\cos^2 u}$	$\operatorname{ex}: (an(x))' = rac{1}{\cos^2 x}$
Logarithms	$(\log_a u)' = rac{u'}{u imes \ln a}$	ex : $(\log_4(6x))' = rac{(6x)'}{6x\ln 4} = rac{6}{6x\ln 4} = rac{1}{x\ln 4}$
Natural logarithm	$(\ln u)' = \frac{u'}{u}$	ex : $(\ln(5x))'=rac{(5x)'}{5x}=rac{5}{5x}=rac{1}{x}$