Constant Rule	$\frac{d}{dx}[c]=0$, c is a constant	
Constant Multiple Rule	$\frac{d}{dx}[cu]=c\frac{d}{dx}[u]$, c is a constant	
Sum and Difference Rules	$\frac{d}{dx}[u\pm v]=\frac{du}{dx}\pm\frac{dv}{dx}$	$(u\pm v)'=u'\pm v'$
Product Rule	$\frac{d}{dx}[uv]=u\frac{dv}{dx}+v\frac{du}{dx}$	$(uv)'=u'v+v'u$
Quotient Rule	$\frac{d}{dx}\left[\frac{u}{v}\right]=\frac{v\frac{du}{dx}+u\frac{dv}{dx}}{v^2}$	$\left(\frac{u}{v}\right)'=\frac{u'v-v'u}{v^2}$
Power Rules	$\frac{d}{dx}[x^n]=nx^{n-1}$	$\frac{d}{dx}(U^n)=nU^{n-1}U'$
Chain Rule	$\frac{dy}{dx}=\frac{dy}{du}\bullet\frac{du}{dx}$	
Exponential Rule	$\frac{d}{dx}[e^x]=e^x$	$\frac{d}{dx}[e^u]=e^u\frac{du}{dx}$
Derivative of Natural Log (ln)	$\frac{d}{dx}[\ln x]=\frac{1}{x}$	$\frac{d}{dx}[\ln u]=\frac{1}{u}\frac{du}{dx}=\frac{u'}{u}$
Other bases and Differentiation	$\frac{d}{dx}[a^x]=a^x\ln(a)$ $\quad$ $\frac{d}{dx}\left[\log_a x\right]=\left(\frac{1}{\ln a}\right)\frac{1}{x}$	$\frac{d}{dx}[a^u]=a^u\ln(a)\frac{du}{dx}$ $\quad$ $\frac{d}{dx}\left[\log_a u\right]=\left(\frac{1}{\ln a}\right)\left(\frac{1}{u}\right)\frac{du}{dx}$

$\left(\frac{1}{x}\right)'=-\frac{1}{x^2}$	$\left(\frac{1}{\sqrt{x}}\right)'=-\frac{1}{2x\sqrt{x}}$	$\left(\sqrt{x}\right)'=\frac{1}{2\sqrt{x}}$
$\left(\frac{1}{U}\right)'=-\frac{U'}{U^2}$	$\left(\frac{1}{\sqrt{U}}\right)'=-\frac{U'}{2U^{3/2}}$	$\left(\sqrt{U}\right)'=\frac{U'}{2\sqrt{U}}$

Product Rule: $\log_b MN=\log_b M+\log_b N$

Power Rule: $\log_b M^p=p\log_b M$

Quotient Rule: $\log_b\frac{M}{N}=\log_b M-\log_b N$

General Power Rule	$\int k dx = kx + C$ $\int kf(x)dx = k\int f(x)dx$ $\int [f(x)+g(x)]dx = \int f(x)dx + \int g(x)dx$ $\int [f(x)-g(x)]dx = \int f(x)dx - \int g(x)dx$ $\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad , n \neq -1$ $\int u^n \frac{du}{dx} dx = \int u^n du = \frac{u^{n+1}}{n+1} + C \quad , n \neq -1$
Simple Exponential Rule	$\int e^x dx = e^x + C$
General Exponential Rule	$\int e^x \frac{du}{dx} dx = \int e^x du = e^u + C$
Simple Logarithmic Rule	$\int \frac{1}{x} dx = \ln \lvert x \rvert + C$
General Logarithmic Rule	$\int \frac{du/dx}{u} dx = \int \frac{1}{u} du = \ln \lvert u \rvert + C$
Area	$\int_a^b f(x)dx = F(x)\Big\rvert_a^b = F(b) - F(a)$ $F'(x) = f(x)$
Integration by Parts	$\int udv = uv - \int vdu$

$\int a.dx$	$a.x$
$\int x^n dx$	$\frac{x^{n+1}}{n+1}$; *for* $n \neq -1$
$\int \frac{dx}{x}$	$\ln\lvert x\rvert$
$\int e^{ax} dx$	$\frac{1}{a}e^{ax}$
$\int xe^{ax} dx$	$\frac{e^{ax}}{a^2}(ax-1)$
$\int x^2 e^{ax} dx$	$\frac{e^{ax}}{a^3}\left(a^2x^2 - 2ax + 2\right)$
$\int \frac{e^{ax}}{x} dx$	$\ln x + \frac{ax}{1.1!} + \frac{(ax)^2}{2.2!} + \ldots$
$\int a^x dx = \int e^{x\ln a} dx$	$\frac{a^x}{\ln a}$
$\int \ln x dx$	$x\ln x\ - x$
$\int x\ln x dx$	$\frac{1}{2}x^2\ln x\ - \frac{1}{4}x^2$
$\int \frac{dx}{\sqrt{a^2+x^2}}$	$\ln\left\lvert x+\sqrt{a^2+x^2}\right\rvert$
$\int \sqrt{a^2+x^2} dx$	$\frac{u}{2}\sqrt{a^2+x^2} + \frac{a^2}{2}\ln\left\lvert x+\sqrt{a^2+x^2}\right\rvert$
$\int \frac{dx}{x^2-a^2}$	$\frac{1}{2a}\ln\left\lvert\frac{x-a}{x+a}\right\rvert$
$\int \frac{dx}{ax+b}$	$\frac{1}{a}\ln\lvert ax+b\rvert$