Standard Derivatives

$$\frac{d}{dx}\,1 = 0 \qquad \frac{d}{dx}\,x^n = nx^{n-1} \qquad \frac{d}{dx}\,e^x = e^x$$

$$\frac{d}{dx}\,\ln x = \frac{1}{x} \qquad \frac{d}{dx}\,a^x = a^x \ln a \qquad \frac{d}{dx}\,\log_a x = \frac{1}{x \ln a}$$

$$\frac{d}{dx}\,\sin x = \cos x \qquad \frac{d}{dx}\,\cos x = -\sin x \qquad \frac{d}{dx}\,\tan x = \sec^2 x$$

$$\frac{d}{dx}\,\sec x = \sec x \tan x \qquad \frac{d}{dx}\,\csc x = -\csc x \cot x \qquad \frac{d}{dx}\,\cot x = -\csc^2 x$$

$$\frac{d}{dx}\,\sin^{-1} x = \frac{1}{\sqrt{1-x^2}} \qquad \frac{d}{dx}\,\cos^{-1} x = -\frac{1}{\sqrt{1-x^2}} \qquad \frac{d}{dx}\,\tan^{-1} x = \frac{1}{1+x^2}$$

$$\frac{d}{dx}\,\sec^{-1} x = \frac{1}{|x|\sqrt{x^2-1}} \qquad \frac{d}{dx}\,\csc^{-1} x = -\frac{1}{|x|\sqrt{x^2-1}} \qquad \frac{d}{dx}\,\cot^{-1} x = -\frac{1}{1+x^2}$$

Standard Integrals

$$\int x^n\,dx = \frac{x^{n+1}}{n+1} + c \qquad \int \frac{1}{x}\,dx = \ln|x| + c$$

$$\int e^x\,dx = e^x + c \qquad \int a^x\,dx = \frac{a^x}{\ln a} + c$$

$$\int \sin x\,dx = -\cos x + c \qquad \int \cos x\,dx = \sin x + c$$

$$\int \sec^2 x\,dx = \tan x + c \qquad \int \csc^2 x\,dx = -\cot x + c$$

$$\int \sec x \tan x\,dx = \sec x + c \qquad \int \csc x \cot x\,dx = -\csc x + c$$

$$* \int \tan x\,dx = -\ln|\cos x| + c \qquad * \int \cot x\,dx = \ln|\sin x| + c$$

$$* \int \sec x\,dx = \ln|\sec x + \tan x| + c \qquad * \int \csc x\,dx = -\ln|\csc x + \cot x| + c$$

$$\int \frac{dx}{\sqrt{1-x^2}} = \sin^{-1} x + c \qquad \int \frac{dx}{1+x^2} = \tan^{-1} x + c$$

$$\int \frac{dx}{x\sqrt{x^2-1}} = \sec^{-1}|x| + c$$

* To be derived.