$\int \cos x dx = \sin x$

Similarly

$\frac{d(\cos x)}{dx} = -\sin x$

$d(\cos x) = -\sin x dx$

Taking integral (anti derivatives)

$\int d(\cos x) = \int -\sin x dx$

$\int d(\cos x) = -\int \sin x dx$

$\cos x = -\int \sin x dx$

$-\cos x = \int \sin x dx$

$\int \sin x dx = -\cos x$

$d(\tan x) = \sec^2 x dx$

Taking integral (anti derivatives)

$\int d(\tan x) = \int \sec^2 x dx$

$\tan x = \int \sec^2 x dx$

$\int \sec^2 x dx = \tan x$

$d(\sec x) = \sec x \tan x dx$

Taking integral (anti derivatives)

$\int d(\sec x) = \int \sec x \tan x dx$

$\sec x = \int \sec x \tan x dx$

$\int \sec x \tan x dx = \sec x$

$\frac{d(\csc x)}{dx} = -\csc x \cot x$

$d(\csc x) = -\csc x \cot x dx$

Taking integral (anti derivatives)

$\int d(\csc x) = \int -\csc x \cot x dx$

$\csc x = -\int \csc x \cot x dx$

$-\csc x = \int \csc x \cot x dx$

$\int \csc x \cot x dx = -\csc x$