基本导数公式记忆.

$(x^\mu)' = \mu x^{\mu-1}$

$(\sin x)' = \cos x$

$(\cos x)' = -\sin x$

$(\tan x)' = \sec^2 x$

$(\cot x)' = -\csc^2 x$

$(\sec x)' = \sec x \cdot \tan x$

$(\csc x)' = -\csc \cdot \cot x$

$(a^x)' = a^x \ln a.$

$(e^x)' = e^x$

$(\log_a x)' = \frac{1}{x \ln a}$

$(\ln x)' = \frac{1}{x}$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$

$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$

$(\arctan x)' = \frac{1}{1+x^2}$

$(\text{arccot}\, x)' = -\frac{1}{1+x^2}$

$\sec x = \frac{1}{\cos x}$

$\csc x = \frac{1}{\sin x}$

$1 + \tan^2 x = \sec^2 x$

$1 + \cot^2 x = \csc^2 x$

$\tan x = \left(\frac{\sin x}{\cos x}\right)' = \frac{\cos^2 x + \sin^2 x}{\cos^2 x} = \frac{1}{\cos^2 x}$

$= \sec^2 x.$

$\cot x = \left(\frac{\cos x}{\sin x}\right)' = \frac{-\sin^2 x - \cos^2 x}{\sin^2 x} = -\frac{1}{\sin^2 x}$

$= -\csc^2 x$

$(\sec x)' = \left(\frac{1}{\cos x}\right)' = \left(\frac{\sin^2 x + \cos^2 x}{\cos x}\right)'$

$= \left(\frac{\sin^2 x}{\cos x} + \cos x\right)'$

$= \left(\frac{2\sin x \cos^2 x + \sin^3 x}{\cos^2 x}\right. - \sin x$

$= \frac{\sin x \cos^2 x + \sin^3 x}{\cos^2 x}$

$= \frac{\sin x \cancel{(\cos^2 x + \sin^2 x)}}{\cos^2 x} = \frac{\sin x}{\cos^2 x}$

$= \frac{1}{\cos x} \cdot \frac{\sin x}{\cos x}$

$= \sec x \cdot \tan x.$

$(\csc x)' = \left(\frac{1}{\sin x}\right)' = \left(\frac{\sin^2 x + \cos^2 x}{\sin x}\right)'$

$= \frac{-2\sin^2 x \cos x - \cos^3 x \quad + \sin^3 x}{\sin^2 x}$

$= \frac{\sin^2 x}{\sin^2 x}$

$\arctan x = \frac{1}{1+x^2}$

$\text{arccot}\, x = -\frac{1}{1+x^2}$

$\arcsin x = \frac{1}{\sqrt{1-x^2}}$

$\arccos x = -\frac{1}{\sqrt{1-x^2}}$