Temel Turevler ve integeraller.

$(x^2)'=2x \quad \rightarrow \quad \int x\,dx = \frac{x^2}{2}+C$

$(x^3)'=3x^2 \quad \rightarrow \quad \int x^2\,dx = \frac{x^3}{3}+C$

$(x^7)'=7x^6 \quad \rightarrow \quad \int x^6\,dx = \frac{x^7}{7}+C$

$(x^n)'=nx^{n-1} \quad \rightarrow \quad \int x^n\,dx = \frac{x^{n+1}}{n+1}+C$

$(x^{n+1})'=(n+1)x^n \quad \rightarrow \quad \int x^n\,dx = \frac{x^{n+1}}{n+1}+C$

$(\sin x)'=\cos x \quad \rightarrow \quad \int \cos x\,dx = \sin x + C$

$(\sin ax)'=a\cos ax \quad \rightarrow \quad \int \cos ax\,dx = \frac{1}{a}\sin ax + C$

a= -1 koyalim.

$(\sin -x)' = -\cos -x \quad \rightarrow \quad \int \cos -x\,dx = \frac{1}{-1}\sin -x + C$

cos-x=cos x, sin –x =-sin x

$(\cos x)' = -\sin x \quad \rightarrow \quad \int \sin x\,dx = -\cos x + C$

$(\cos ax)' = -a\sin ax \rightarrow \int \sin ax\,dx = -\frac{1}{a}\cos ax + C$

$(e^x)' = e^x \rightarrow \int e^x\,dx = e^x + C$

$(e^{ax})' = a\,e^{ax} \rightarrow \int e^{ax}\,dx = \frac{1}{a}e^{ax} + C$

a=-1 koyalim

$(e^{-x})' = -e^{-x} \rightarrow \int e^{-x}\,dx = -e^{-x} + C$

$(\mathrm{Ln}\, x)' = \frac{1}{x} \quad \rightarrow \quad \int \frac{1}{x}\,dx = \mathrm{Ln}\, x + C$

$(\mathrm{Ln}\, ax)' = \frac{a}{ax} = \frac{1}{x}$

$$\int \frac{1}{ax}\,dx = \frac{1}{a}\int \frac{1}{x}\,dx = \frac{1}{a}\mathrm{Ln}\, x + C$$

$(\mathrm{Ln}\, -x)' = \frac{-1}{-x} = \frac{1}{x} \quad \rightarrow \quad \int \frac{1}{x}\,dx = \mathrm{Ln}\,|x| + C$

$(\tan x)' = \frac{1}{\cos^2 x} \quad \rightarrow \quad \int \frac{1}{\cos^2 x}\,dx = \tan x + C$

$(\tan ax)' = \frac{a}{\cos^2 ax} \rightarrow$

$\int \frac{1}{\cos^2 ax}\,dx = \frac{1}{a}\tan ax + C$

$(\cot ax)' = -\frac{a}{\sin^2 ax} \rightarrow \int \frac{1}{\sin^2 ax}\,dx = \frac{-1}{a}\cot ax$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}} \rightarrow \int \frac{1}{\sqrt{1-x^2}}\,dx = \arcsin x + C$

$(\arcsin ax)' = \frac{a}{\sqrt{1-(ax)^2}} \rightarrow \int \frac{1}{\sqrt{1-(ax)^2}}\,dx = \frac{1}{a}\arcsin ax$

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

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

$(\arccos ax)' = \frac{-a}{\sqrt{1-(ax)^2}} \rightarrow \int \frac{1}{\sqrt{1-(ax)^2}}\,dx = -\frac{1}{a}\arcsin ax$

$(\arctan x)' = \frac{1}{1+x^2} \rightarrow \int \frac{1}{1+x^2}\,dx = \arctan x$

$(\arctan ax)' = \frac{a}{1+(ax)^2} \rightarrow \int \frac{1}{1+(ax)^2}\,dx = \frac{1}{a}\arctan ax$

$(q^x)' = q^x\,\mathrm{Ln}\, q \rightarrow \int q^x\,dx = \frac{1}{\mathrm{Ln}\, q}q^x + C$

$(\sinh x)' = \cosh x \quad \rightarrow \quad \int \cosh x\,dx = \sinh x + C$

$(\cosh x)' = \sinh x \quad \rightarrow \quad \int \sinh x\,dx = \cosh x + C$

$(\tanh x)' = \frac{1}{\cosh^2 x} \rightarrow \int \frac{1}{\cosh^2 x}\,dx = \tanh x$

$(\mathrm{arc}\cosh x)' = \frac{1}{\sqrt{x^2-1}} \rightarrow$

$\int \frac{1}{\sqrt{x^2-1}}\,dx = \mathrm{arc}\cosh x$

$(\mathrm{arc}\sinh x)' = \frac{1}{\sqrt{x^2+1}} \rightarrow \int \frac{1}{\sqrt{x^2+1}}\,dx = \mathrm{arc}\sinh x + C$

$(\mathrm{arc}\tanh x)' = \frac{1}{x^2-1} \rightarrow \int \frac{1}{x^2-1}\,dx = \mathrm{arc}\tanh x + C$

Temel Formuller

$\sin^2 x+\cos^2 x=1$

cos(x+y)=cosx cosy - sinx siny

sin(x+y)=sinx cosy + siny cosx

sin(-x)=- sinx

cos(-x)=cos(x)

tan(-x)=-tan(x)

cos(x-y)=cosx cos y + sinx sin y

sin(x-y)=sinx cosy - siny cos x

cosx cosy= $\frac{1}{2}$ [cos(x+y) +cos(x-y)]

sinx siny = $\frac{1}{2}$ [cos(x-y)- cos(x+y)]

sinx cosy = $\frac{1}{2}$ [sin(x+y)+ sin(x-y)]

cos(x+90)=– sinx

cos(x- 90)= sinx

sin(x+ 90)= cosx

sin(x- 90)= -cosx

cos(90-q)= sinq

sin(90-q)= cosq

$\cos(2x) = 2\cos^2 x -1$

$\cos^2 x = \frac{1}{2}$ [1+cos(2x)]

$\cos(2x) =1- 2\sin^2 x$

$\sin^2 x = \frac{1}{2}$ [1-cos(2x)]

sin2x =2 sinx cosx

$\cos q = 2\cos^2 \frac{q}{2} -1$

$\cos q = 1-2\sin^2 \frac{q}{2}$

$\sin q =2 \sin\frac{q}{2} \cos\frac{q}{2}$

$\sin^3 q = = - \frac{1}{4} \sin(3q) + \frac{3}{4} \sin q$

$\sin(3q)= -4\sin^3 q +3\sin q$

$\cos^3 q = = \frac{1}{4} \cos 3q + \frac{3}{4} \cos q$

$\cos 3q=4 \cos^3 q -3 \cos q$

$$\tan(x+y) = \frac{\tan x + \tan y}{1-\tan x \tan y}$$

$$\tan(x-y) = \frac{\tan x - \tan y}{1+\tan x \tan y}$$

$$\tan(2x) = \frac{2\tan x}{1-\tan^2 x}$$

$$\tan(q) = \frac{2\tan\frac{q}{2}}{1-\tan^2\frac{q}{2}}$$

$$\tan x = \frac{\sin x}{\sqrt{1-\sin^2 x}} = \frac{\sqrt{1-\cos^2 x}}{\cos x}$$

$$\sin x = \frac{\tan x}{\sqrt{1+\tan^2 x}}$$

$$\cos x = \frac{1}{\sqrt{1+\tan^2 x}}$$

$$\cos x = \frac{1-\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}}$$

$$\sin x = \frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}}$$

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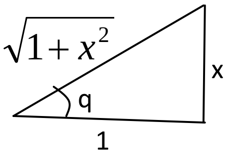
Basit hatirlama teknigi



tan q = $\frac{x}{1}$ =x

$\sin q = \frac{x}{\sqrt{1+x^2}} = \frac{\tan q}{\sqrt{1+\tan^2 q}}$

$\cos q = \frac{1}{\sqrt{1+x^2}} = \frac{1}{\sqrt{1+\tan^2 q}}$

sin 2q=2sin q cos q= $\frac{2x}{1+x^2} = \frac{2\tan q}{1+\tan^2 q}$

2q=p q=p/2

$$\sin p = \frac{2\tan\frac{p}{2}}{1+\tan^2\frac{p}{2}}$$