

ΠΑΡΑΓΩΓΟΙ – ΟΛΟΚΛΗΡΩΜΑΤΑ

ΠΙΝΑΚΑΣ ΠΑΡΑΓΩΓΩΝ		ΠΙΝΑΚΑΣ ΟΛΟΚΛΗΡΩΜΑΤΩΝ	
Απλή συνάρτηση $f(x)$	Σύνθετη συνάρτηση $f(g(x))$	Απλή συνάρτηση $f(x)$	Σύνθετη συνάρτηση $f(g(x))$
$(x)' = 1, (A)' = 0 \quad A \in \mathbb{R}$	$[Af(x)]' = Af'(x)$	$\int dx = x + c$	$\int Af(x) dx = A \int f(x) dx$
$(x^a)' = ax^{a-1} \quad a \in \mathbb{R}$	$[f^a(x)]' = a[f(x)]^{a-1} \cdot f'(x)$	$\int x^a dx = \frac{x^{a+1}}{a+1} + c \quad a \neq -1$	$\int f^a(x)f'(x)dx = \frac{f^{a+1}(x)}{a+1} + c$
$(\sqrt{x})' = \frac{1}{2\sqrt{x}}$	$[\sqrt{f(x)}]' = \frac{1}{2\sqrt{f(x)}} \cdot f'(x)$	$\int \frac{dx}{\sqrt{x}} = 2\sqrt{x} + c$	$\int \frac{f'(x)}{\sqrt{f(x)}} dx = 2\sqrt{f(x)} + c$
$\left(\frac{1}{x}\right)' = (x^{-1})' = -\frac{1}{x^2}$	$\left(\frac{1}{f(x)}\right)' = -\frac{1}{f^2(x)} \cdot f'(x)$	$\int \frac{1}{x^2} dx = -\frac{1}{x} + c$	$\int \frac{f'(x)}{f^2(x)} dx = -\frac{1}{f(x)} + c$
$(e^x)' = e^x$	$[e^{f(x)}]' = e^{f(x)} f'(x)$	$\int e^x dx = e^x + c$	$\int e^{f(x)} f'(x) dx = e^{f(x)} + c$
$(a^x)' = a^x \cdot \ln a \quad a \neq 1 > 0$	$[a^{f(x)}]' = a^{f(x)} f'(x) \ln a$	$\int a^x dx = \frac{a^x}{\ln a} + c$	$\int a^{f(x)} f'(x) dx = \frac{a^{f(x)}}{\ln a} + c$
$(\ln x)' = \frac{1}{x}, \quad x > 0$	$[\ln f(x)]' = \frac{1}{f(x)} f'(x)$	$\int \frac{1}{x} dx = \ln x + c$	$\int \frac{f'(x)}{f(x)} dx = \ln f(x) + c$
$(\sin x)' = \cos x$	$[\sin f(x)]' = f'(x) \cos f(x)$	$\int \cos x dx = \sin x + c$	$\int f'(x) \cos f(x) dx = \sin f(x) + c$
$(\cos x)' = -\sin x$	$[\cos f(x)]' = -f'(x) \sin f(x)$	$\int \sin x dx = -\cos x + c$	$\int f'(x) \sin f(x) dx = -\cos f(x) + c$
$(\tan x)' = \frac{1}{\cos^2 x}$	$[\tan f(x)]' = \frac{1}{\cos^2 f(x)} f'(x)$	$\int \frac{dx}{\cos^2 x} = \tan x + c$	$\int \frac{f'(x)}{\cos^2 f(x)} dx = \tan f(x) + c$
$(\cot x)' = \frac{-1}{\sin^2 x}$	$[\cot f(x)]' = \frac{-1}{\sin^2 f(x)} f'(x)$	$\int \frac{dx}{\sin^2 x} = -\cot x + c$	$\int \frac{f'(x)}{\sin^2 f(x)} dx = -\cot f(x) + c$
$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$	$[\arcsin f(x)]' = \frac{1}{\sqrt{1-f^2(x)}} f'(x)$	$\int \frac{dx}{\sqrt{1-x^2}} = \arcsin x + c$	$\int \frac{f'(x)}{\sqrt{1-f^2(x)}} dx = \arcsin f(x) + c$
$(\arccos x)' = \frac{-1}{\sqrt{1-x^2}}$	$[\arccos f(x)]' = \frac{-1}{\sqrt{1-f^2(x)}} f'(x)$	$\int \frac{dx}{\sqrt{1-x^2}} = -\arccos x + c$	$\int \frac{f'(x)}{\sqrt{1-f^2(x)}} dx = -\arccos f(x) + c$
$(\arctan x)' = \frac{1}{1+x^2}$	$[\arctan f(x)]' = \frac{1}{1+f^2(x)} f'(x)$	$\int \frac{dx}{x^2+1} = \arctan x + c$	$\int \frac{f'(x)}{1+f^2(x)} dx = \arctan f(x) + c$
$(\sinh x)' = \cosh x$	$[\sinh f(x)]' = f'(x) \cosh f(x)$	$\int \cosh x dx = \sinh x + c$	$\int f'(x) \cosh f(x) dx = \sinh f(x) + c$
$(\cosh x)' = \sinh x$	$[\cosh f(x)]' = f'(x) \sinh f(x)$	$\int \sinh x dx = \cosh x + c$	$\int f'(x) \sinh f(x) dx = \cosh f(x) + c$
$\int \frac{dx}{\sqrt{x^2+a}} = \ln x + \sqrt{x^2+a} + c \quad a \in \mathbb{R} \quad \int \frac{dx}{x^2-a^2} = \frac{1}{2a} \ln \left \frac{x-a}{x+a} \right + c \quad \int \frac{dx}{(a^2+x^2)^{3/2}} = \frac{1}{a} \sin[\arctan x/a] + c$			
$\int \sqrt{a^2-x^2} dx = \frac{x}{2} \sqrt{a^2-x^2} + \frac{a^2}{2} \arcsin\left(\frac{x}{a}\right) + c \quad \int \sqrt{x^2+a^2} dx = \frac{x}{2} \sqrt{x^2+a^2} + \frac{a^2}{2} \ln\left(x + \sqrt{x^2+a^2}\right) + c$			