ΤΥΠΟΛΟΓΙΟ

ΠΑΡΑΓΩΓΟΙ	ΟΛΟΚΛΗΡΩΜΑΤΑ
$(c)'=0$	$\int 0dx = c$
$(x)'=1$	$\int 1dx = x+c$
$(e^x)'=e^x,\quad (e^{\alpha x})'=\alpha e^{\alpha x}$	$\int e^x dx = e^x + c,\ \int e^{\alpha x}dx = \frac{e^{\alpha x}}{\alpha}+c$
$(x^{\alpha})'=\alpha x^{\alpha-1}$	$\int x^{\kappa}dx = \frac{x^{\kappa+1}}{\kappa+1}+c$
$(\ln x)'=\frac{1}{x}$	$\int \frac{1}{x}dx = \ln\|x\|+c$
$(\sqrt{x})'=\frac{1}{2\sqrt{x}}$	$\int \frac{1}{\sqrt{x}}dx = 2\sqrt{x}+c$
$\left(\frac{1}{x}\right)'=-\frac{1}{x^2}$	$\int \frac{1}{x^2}dx = -\frac{1}{x}+c$
$(\sin x)'=\cos x$	$\int \sin xdx = -\cos x + c, \int \sin \alpha xdx = \frac{-\cos \alpha x}{\alpha}+c$
$(\cos x)'=-\sin x$	$\int \cos xdx = \sin x + c,\ \int \cos \alpha xdx = \frac{\sin \alpha x}{\alpha}+c$
$(\alpha^x)'=\alpha^x \ln\alpha$	$\int \alpha^x dx = \frac{\alpha^x}{\ln \alpha}+c$
$(\tan x)'=\frac{1}{\cos^2 x}$	$\int \frac{1}{\cos^2 x}dx = \tan x + c$
$(\cot x)'=-\frac{1}{\sin^2 x}$	$\int \frac{-1}{\sin^2 x}dx = \cot x + c$
$(ar\sin x)'=\frac{1}{\sqrt{1-x^2}}$	$\int \frac{1}{\sqrt{1-x^2}}dx = \arcsin x + c$
$(ar\cos x)'=\frac{-1}{\sqrt{1-x^2}}$	$\int \frac{1}{\sqrt{1-x^2}}dx = -\arccos x + c$
$(ar\tan x)'=\frac{1}{1+x^2}$	$\int \frac{1}{1+x^2}dx = \arctan x + c$ $\int \frac{dx}{x^2+\alpha^2} = \frac{1}{\alpha}\arctan(\frac{x}{\alpha})+c$
$(\cosh x)'=\sinh x$	$\int \cosh xdx = \sinh x + c$
$(\sinh x)'=\cosh x$	$\int \sinh xdx = \cosh x + c$

ΔΕΝ ΞΕΧΝΩ:

$\text{arctanx} = \varepsilon\phi^{-1}x = \tau o\xi\varepsilon\varphi x$ sinx=ημχ, cosx=συνχ

$\text{arcsinx} = \eta\mu^{-1}x = \tau o\xi\eta\mu x$ tanx=εφχ, cotx= σφχ

$ar\,\text{ccos}\,x = \sigma\upsilon\nu^{-1}x = \tau o\xi\sigma\upsilon\nu x$

$$\lim_{x\to+\infty} \text{arctanx} = \frac{\pi}{2}, \quad \lim_{x\to-\infty} \text{arctanx} = -\frac{\pi}{2}$$

$$\lim_{x\to-1} \text{arccosx} = \pi, \quad \lim_{x\to 1} \text{arccosx} = 0$$

$$\lim_{x\to 1} \text{arctanx} = \frac{\pi}{4}, \quad \lim_{x\to-1} \text{arctanx} = -\frac{\pi}{4}$$

$$\sinh x = \frac{e^x - e^{-x}}{2}, \quad \cos\text{h}\, x = \frac{e^x + e^{-x}}{2}$$

ΤΥΠΟΛΟΓΙΟ Laplace

$f(t)=\mathrm{L}^{-1}\{\mathrm{F}(s)\}$	$\mathrm{F}(s)=L\{f(t)\}$
1	$\frac{1}{s}$
$e^{\alpha t}$	$\frac{1}{s-\alpha}$
$\sin \alpha t$	$\frac{\alpha}{s^2+\alpha^2}$
$\cos \alpha t$	$\frac{s}{s^2+\alpha^2}$
$e^{bt}\sin \alpha t$	$\frac{\alpha}{(s-b)^2+\alpha^2}$
$e^{bt}\cos \alpha t$	$\frac{s-b}{(s-b)^2+\alpha^2}$
t^n	$\frac{n!}{s^{n+1}}$
$e^{\alpha t}t^n$	$\frac{n!}{(s-\alpha)^{n+1}}$
$\mathrm{t}\sin \alpha t$	$\frac{2\alpha s}{(s^2+\alpha^2)^2}$
$\mathrm{t}\cos \alpha t$	$\frac{s^2-\alpha^2}{(s^2+\alpha^2)^2}$
$\sinh \alpha t$	$\frac{\alpha}{s^2-\alpha^2}$
$\cosh \alpha t$	$\frac{s}{s^2-\alpha^2}$
$\mathrm{e}^{bt}\sinh \alpha t$	$\frac{\alpha}{(s-b)^2-\alpha^2}$
$\mathrm{t}\sinh \alpha t$	$\frac{2\alpha s}{(s^2-\alpha^2)^2}$
$\mathrm{e}^{bt}\cosh \alpha t$	$\frac{s-b}{(s-b)^2-\alpha^2}$
$\mathrm{t}\cosh \alpha t$	$\frac{s^2+\alpha^2}{(s^2-\alpha^2)^2}$
$f'(t)$	$sF(s)-f(0)$
$f''(t)$	$s^2F(s)-\mathrm{sf}(0)-f'(0)$

$f'''(t)$	$s^3F(s)-s^2f(0)-sf'(0)-f''(0)$
$u(t)$	$\frac{1}{s}$
$u(t-\alpha)$	$\frac{e^{-\alpha s}}{s}$
$u_c(t)$	$\frac{e^{cs}}{s}$
$\delta(t)$	1

Γενικά ισχύει:

$L(t^n\ f(t))(s)=(-1)^n F^n(s)$

$L(e^{bt}\ f(t))(s)=F(s-b)$