

Elementary Laplace Transforms

$f(t) = L^{-1}\{F(p)\}$	$F(p) = L\{f(t)\}$
1	$\frac{1}{p}$ $p > 0$ (1)
e^{at}	$\frac{1}{p-a}$ $p > a$ (2)
$\sin at$	$\frac{a}{p^2 + a^2}$ $p > 0$ (3)
$\cos at$	$\frac{p}{p^2 + a^2}$ $p > 0$ (4)
$t^n, \quad n \in N$	$\frac{n!}{p^{n+1}}$ $p > 0$ (5)
$t \cos at$	$\frac{p^2 - a^2}{(p^2 + a^2)^2}$ $p > 0$ (13)
$\frac{\sin at - at \cos at}{2a^3}$	$\frac{1}{(p^2 + a^2)^2}$ $p > 0$ (14)
$u_c(t)$	$\frac{e^{-cp}}{p}$ $p > 0$ (15)
$u_c(t) f(t-c)$	$e^{-cp} F(p)$ (16)
$e^{ct} f(t)$	$F(p-c)$ (17)
$f(ct)$	$\frac{1}{c} F\left(\frac{p}{c}\right)$ $c > 0$ (18)
$\int_0^t f_1(t-\tau) f_2(\tau) d\tau$	$F_1(p) F_2(p)$ (19)
$\delta(t-c)$	e^{-cp} (20)
$(-t)^n f(t)$	$F^{(n)}(p)$ (21)
$f^{(n)}(t)$	$p^n F(p) - p^{n-1} f(0) - \dots - f^{(n-1)}(0)$ (22)