Table A.1 General properties of the Laplace-Stieltjes transforms.

$F(t)$	$F^*(s) = \int_0^\infty e^{-st} dF(t)$
$F_1(t) + F_2(t)$	$F_1^*(s) + F_2^*(s)$
$aF(t)$	$aF^*(s)$
$F(t-a)$ $(a > 0)$	$e^{-sa}F^*(s)$
$F(at)$ $(a > 0)$	$F^*(s/a)$
$e^{-at}F(t)$ $(a > 0)$	$\frac{s}{s+a}F^*(s+a)$
$F'(t) = \frac{dF(t)}{dt}$	$s[F^*(s) - F(0)]$
$tF'(t)$	$-s\frac{dF^*(s)}{ds}$
$\int_0^t F(x)dx$	$\frac{1}{s}F^*(s)$
$\int_0^t \cdots \int_0^t F(t)(dt)^n$	$\frac{1}{s^n}F^*(s)$
$\lim_{t\to+0} F(t)$	$\lim_{s\to\infty} F^*(s)$
$\lim_{t\to\infty} F(t)$	$\lim_{s\to+0} F^*(s)$

Table A.2 Formulas of the Laplace-Stieltjes Transforms

$F(t)$	$F^*(s) = \int_0^\infty e^{-st} dF(t)$
$\delta(t-a)^\dagger$ $(a > 0)$	se^{-sa}
$1(t-a)^\ddagger$ $(a > 0)$	e^{-sa}
$1(t)$	1
t	$\frac{1}{s}$
t^n (n : a positive integer)	$\frac{n!}{s^n}$
t^α $(\alpha > -1)$	$\frac{\Gamma(\alpha+1)}{s^\alpha}$
$e^{-\alpha t}$ $(\alpha > 0)$	$\frac{s}{s+\alpha}$
$te^{-\alpha t}$ $(\alpha > 0)$	$\frac{s}{(s+\alpha)^2}$
$t^n e^{-\alpha t}$ $(\alpha > 0)$	$\frac{n!s}{(s+\alpha)^{n+1}}$
$t^\beta e^{-\alpha t}$ $(\alpha > 0, \beta > -1)$	$\frac{s\Gamma(\beta+1)}{(s+\alpha)^{\beta+1}}$
$\cos \alpha t$	$\frac{s^2}{s^2+\alpha^2}$ $(\Re(s) > \mid \alpha \mid)$
$\sin \alpha t$	$\frac{s\alpha}{s^2+\alpha^2}$ $(\Re(s) > \mid \alpha \mid)$
$\cosh \alpha t$	$\frac{s^2}{s^2-\alpha^2}$ $(\Re(s) > \mid \alpha \mid)$
$\sinh \alpha t$	$\frac{s\alpha}{s^2-\alpha^2}$ $(\Re(s) > \mid \alpha \mid)$
$\log t$	$-\gamma - \log s$ §

† Dirac's delta function.
‡ Heaviside's unit function.
§ $\gamma = 0.57721\cdots$, Euler's constant.