Table of Laplace Transforms

	$f(t) \equiv \mathscr{L}^{-1}\{F(s)\}(t)$	$F(s) \equiv \mathscr{L}\{f(t)\}(s)$
L1.	$f(t)$	$F(s) = \int_0^\infty e^{-st} f(t)\,dt$
L2.	$1,\ H(t),\ U(t)$	$\frac{1}{s}$
L3.	$U(t-a)$	$\frac{e^{-as}}{s}$
L4.	$t^n \quad (n = 1, 2, 3, \ldots)$	$\frac{n!}{s^{n+1}}$
L5.	$t^a \quad (a > -1)$	$\frac{\Gamma(a+1)}{s^{a+1}}$
L6.	e^{at}	$\frac{1}{s-a}$
L7.	$\sin(\omega t)$	$\frac{\omega}{s^2+\omega^2}$
L8.	$\cos(\omega t)$	$\frac{s}{s^2+\omega^2}$
L9.	$f'(t)$	$sF(s) - f(0)$
L10.	$f''(t)$	$s^2F(s) - sf(0) - f'(0)$
L11.	$t^n f(t) \quad (n = 1, 2, 3, \ldots)$	$(-1)^n F^{(n)}(s)$
L12.	$e^{at} f(t)$	$F(s-a)$
L13.	$e^{at}\mathscr{L}^{-1}\{F(s+a)\}$	$F(s)$
L14.	$f(t+P) = f(t)$	$\frac{\int_0^P e^{-st} f(t)\,dt}{1-e^{-sP}}$
L15.	$f(t)U(t-a)$	$e^{-as}\mathscr{L}\{f(t+a)\}$
L16.	$f(t-a)U(t-a)$	$e^{-as}F(s)$
L17.	$\int_0^t f(z)\,dz$	$\frac{F(s)}{s}$
L18.	$\int_0^t f(z)g(t-z)\,dz$	$F(s)G(s)$

Table of Laplace Transforms

	$f(t) \equiv \mathscr{L}^{-1}\{F(s)\}(t)$	$F(s) \equiv \mathscr{L}\{f(t)\}(s)$
L19.	$\dfrac{f(t)}{t}$	$\displaystyle\int_s^\infty F(z)\,dz$
L20.	$\dfrac{1}{a}\left(e^{at}-1\right)$	$\dfrac{1}{s\,(s-a)}$
L21.	$t^n e^{at},\ n=1,2,3,\ldots$	$\dfrac{n!}{(s-a)^{n+1}}$
L22.	$\dfrac{e^{at}-e^{bt}}{a-b}$	$\dfrac{1}{(s-a)(s-b)}$
L23.	$\dfrac{ae^{at}-be^{bt}}{a-b}$	$\dfrac{s}{(s-a)(s-b)}$
L24.	$\sinh(\omega t)$	$\dfrac{\omega}{s^2-\omega^2}$
L25.	$\cosh(\omega t)$	$\dfrac{s}{s^2-\omega^2}$
L26.	$\sin(\omega t)-\omega t\cos(\omega t)$	$\dfrac{2\omega^3}{(s^2+\omega^2)^2}$
L27.	$t\sin(\omega t)$	$\dfrac{2\omega s}{(s^2+\omega^2)^2}$
L28.	$\sin(\omega t)+\omega t\cos(\omega t)$	$\dfrac{2\omega s^2}{(s^2+\omega^2)^2}$
L29.	$\dfrac{b\sin(at)-a\sin(bt)}{ab(b^2-a^2)}$	$\dfrac{1}{(s^2+a^2)(s^2+b^2)}$
L30.	$\dfrac{\cos(at)-\cos(bt)}{b^2-a^2}$	$\dfrac{s}{(s^2+a^2)(s^2+b^2)}$
L31.	$\dfrac{a\sin(at)-b\sin(bt)}{a^2-b^2}$	$\dfrac{s^2}{(s^2+a^2)(s^2+b^2)}$
L32.	$e^{-bt}\sin(\omega t)$	$\dfrac{\omega}{(s+b)^2+\omega^2}$
L33.	$e^{-bt}\cos(\omega t)$	$\dfrac{s+b}{(s+b)^2+\omega^2}$
L34.	$1-\cos(\omega t)$	$\dfrac{\omega^2}{s(s^2+\omega^2)}$
L35.	$\omega t-\sin(\omega t)$	$\dfrac{\omega^3}{s^2(s^2+\omega^2)}$
L36.	$\delta(t-a)$	$e^{-sa} \qquad a>0,\ \ s>0$
L37.	$\delta(t-a)f(t)$	$f(a)e^{-sa} \qquad a>0,\ \ s>0$