Laplace Transform $F(s)$	Time Function $f(t),\ t > 0$
1	$\delta(t), unit\ impulse$
$\frac{1}{s}$	$u_s(t), unit\ step$
$\frac{1}{s^2}$	t
$\frac{1}{s^{n+1}}$	$\frac{t^n}{n!}$
$\frac{1}{s+a}$	e^{-at}
$\frac{1}{(s+a)^2}$	te^{-at}
$\frac{1}{(s+a)^n}$	$\frac{1}{(n-1)!}t^{n-1}e^{-at}$
$\frac{1}{s(s+a)}$	$\frac{1}{a}(1-e^{-at})$
$\frac{\omega}{s^2+\omega^2}$	$\sin(\omega t)$
$\frac{s}{s^2+\omega^2}$	$\cos(\omega t)$
$\frac{\omega}{(s+b)^2+\omega^2}$	$e^{-bt}\sin(\omega t)$
$\frac{s+b}{(s+b)^2+\omega^2}$	$e^{-bt}\cos(\omega t)$
$\frac{1}{s(s+a)^2}$	$\frac{1}{a^2}(1-e^{-at}-ate^{-at})$
$\frac{s}{(s+a)(s+b)}$	$\frac{1}{b-a}\left(be^{-bt}-ae^{-at}\right) \quad , \quad a \neq b$
$\frac{1}{(s+a)(s+b)}$	$\frac{1}{b-a}\left(e^{-at}-e^{-bt}\right) \quad , \quad a \neq b$
$\frac{s+c}{(s+a)(s+b)}$	$\frac{1}{b-a}\left((b-c)e^{-bt}-(a-c)e^{-at}\right) \quad , \quad a \neq b$
$\frac{\omega}{s^2-\omega^2}$	$\sinh(\omega t)$
$\frac{s}{s^2-\omega^2}$	$\cosh(\omega t)$
$\frac{a^2}{s^2(s+a)}$	$at-1+e^{-at}$
$\frac{a^2}{s(s+a)^2}$	$1-(at+1)e^{-at}$
$\frac{\omega_n^2}{s^2+2\zeta\omega_n s+\omega_n^2}$	$\frac{\omega_n}{\sqrt{1-\zeta^2}}e^{-\zeta\omega_n t}\sin\left(\omega_n\sqrt{1-\zeta^2}\,t+cos^{-1}(\zeta)\right)u_s(t) \quad , \quad 0<\zeta<1$
$\frac{\omega_n^2}{s(s^2+2\zeta\omega_n s+\omega_n^2)}$	$\left(1-\frac{e^{-\zeta\omega_n t}}{\sqrt{1-\zeta^2}}\sin\left(\omega_n\sqrt{1-\zeta^2}\,t+\cos^{-1}(\zeta)\right)\right)u_s(t) \quad , \quad 0<\zeta<1$

Property	$\boldsymbol{f(t)}$	$\boldsymbol{F(s)}$
Linearity	$k_1 f_1(t) \pm k_2 f_2(t)$	$k_1 F_1(s) \pm k_2 F_2(s)$, $k_1, k_2 \in \mathbb{C}$
Time-delay (Shift in Time)	$f(t-T),\ t>0$	$e^{-Ts}F(s)$
Differentiation	$f'(t) = \dfrac{df(t)}{dt}$	$sF(s) - f(0)$
	$f''(t) = \dfrac{d^2 f(t)}{dt^2}$	$s^2F(s) - sf(0) - f'(0)$
	$f^{(n)}(t) = \dfrac{d^{\mathrm{n}} f(t)}{dt^{\mathrm{n}}}$	$s^nF(s) - \sum_{k=1}^{n} s^{n-k} f^{(k-1)}(0)$
Integration	$\int_0^t f(\mathrm{t})dt$	$\dfrac{F(s)}{s}$
Convolution	$f_1(t) * f_2(t)$	$F_1(s) \cdot F_2(s)$
Time Scaling	$f(at),\quad a>0$	$\dfrac{1}{a}F\left(\dfrac{s}{a}\right)$
Initial-value Theorem	$f(0^+) = \lim_{t \to 0^+} f(t)$	$\lim_{s \to \infty} sF(s)$
Final-value Theorem	$f(\infty) = \lim_{t \to \infty} f(t)$	$\lim_{s \to 0} sF(s)$