

1-5 TABLICA 1-2. Pary transformacji Laplace'a i transformacji $\mathcal{Z}$

	$F(s)$	$f(t) = \mathcal{L}^{-1}\{F(s)\}$	$f_{kT} = f_k$	$\mathcal{Z}\{f_k\} = F(z)$
1	$\frac{1}{s}$	1	1	$\frac{z}{z-1}$
2	$\frac{1}{s^2}$	t	kT	$\frac{Tz}{(z-1)^2}$
3	$\frac{1}{s^3}$	$\frac{1}{2}t^2$	$\frac{1}{2}(kT)^2$	$\frac{T^2}{2} \frac{z(z+1)}{(z-1)^3}$
4	$\frac{1}{s+a}$	e^{-at}	$c^k, \quad c = e^{-aT}$	$\frac{z}{z-c}$
5	$\frac{1}{(s+a)^2}$	te^{-at}	$(kT)c^k, \quad c = e^{-aT}$	$\frac{cTz}{(z-c)^2}$
6	$\frac{1}{(s+a)^3}$	$\frac{1}{2}t^2e^{-at}$	$\frac{1}{2}(kT)^2c^k, \quad c = e^{-aT}$	$\frac{T^2}{2} \frac{cz(z+c)}{(z-c)^3}$
7	$\frac{a}{s(s+a)}$	$1 - e^{-at}$	$1 - c^k, \quad c = e^{-aT}$	$\frac{(1-c)z}{(z-1)(z-c)}$
8	$\frac{a}{s^2(s+a)}$	$\frac{1}{a}[at - (1 - e^{-at})]$	$\frac{1}{a}[kAT - 1 + c^k], \quad c = e^{-aT}$	$\frac{Tz}{(z-1)^2} - \frac{(1-c)z}{a(z-1)(z-c)}$
9	$\frac{s}{(s+a)^2}$	$(1-at)e^{-at}$	$(1 - kAT)c^k, \quad c = e^{-aT}$	$\frac{z^2 - c(1 + aT)z}{(z-c)^2}$
10	$\frac{a^2}{s(s+a)^2}$	$1 - (1+at)e^{-at}$	$1 - (1 + kAT)c^k, \quad c = e^{-aT}$	$\frac{z}{z-1} - \frac{z-c}{cATz} - \frac{z}{(z-c)^2}$

Tablica 1-2 (cd.)

	$F(s)$	$f(t) = \mathcal{L}^{-1}\{F(s)\}$	$f_{kT} = f_k$	$\mathcal{Z}\{f_k\} = F(z)$
11	$\frac{b-a}{(s+a)(s+b)}$	$e^{-at} - e^{-bt}$	$c^k - d^k, \quad c = e^{-aT}, \quad d = e^{-bT}$	$\frac{(c-d)z}{(z-c)(z-d)}$
12	$\frac{(b-a)s}{(s+a)(s+b)}$	$-ae^{-at} + be^{-bt}$	$-ac^k + bd^k, \quad c = e^{-aT}, \quad d = e^{-bT}$	$\frac{(b-a)z^2 - (bd - ac)z}{(z-c)(z-d)}$
13	$\frac{ab}{s(s+a)(s+b)}$	$1 + \frac{be^{-at} - ae^{-bt}}{a-b}$	$1 + \frac{bc^k - ad^k}{a-b}, \quad c = e^{-aT}, \quad d = e^{-bT}$	$\frac{z}{z-1} + \frac{b}{a-b} \frac{z}{z-c} - \frac{c}{a-b} \frac{z}{z-d}$
14	$\frac{\beta}{s^2 + \beta^2}$	$\sin \beta t$	$\sin k\beta T$	$\frac{z \sin \beta T}{z^2 - 2z \cos \beta T + 1}$
15	$\frac{s}{s^2 + \beta^2}$	$\cos \beta t$	$\cos k\beta T$	$\frac{z^2 - z \cos \beta T}{z^2 - 2z \cos \beta T + 1}$
16	$\frac{\beta}{s^2 - \beta^2}$	$\sinh \beta t$	$\sinh k\beta T$	$\frac{z \sinh \beta T}{z^2 - 2z \cosh \beta T + 1}$
17	$\frac{s}{s^2 - \beta^2}$	$\cosh \beta t$	$\cosh k\beta T$	$\frac{z^2 - z \cosh \beta T}{z^2 - 2z \cosh \beta T + 1}$
18	$\frac{s+\alpha}{(s+\alpha)^2 + \beta^2}$	$e^{-\alpha t} \cos \beta t$	$c^k \cos k\beta T, \quad c = e^{-\alpha T}$	$\frac{z^2 - cz \cos \beta T}{z^2 + 2cz \cos \beta T + c^2}$
19	$\frac{s+\alpha}{(s+\alpha)^2 + \left(\frac{\pi}{T}\right)^2}$	$e^{-\alpha t} \cos \frac{\pi t}{T}$	$(-c^k), \quad c = e^{-\alpha T}$	$\frac{z}{z-c}$
20	$\frac{\beta}{(s+\alpha)^2 + \beta^2}$	$e^{-\alpha t} \sin \beta t$	$c^k \sin k\beta T, \quad c = e^{-\alpha T}$	$\frac{cz \sin \beta T}{z^2 - 2cz \cos \beta T + c^2}$