

## Laplace Transform Formulas

In the sequel denote by  $F(s) = \mathcal{L}[f(t)]$ ,  $G(s) = \mathcal{L}[g(t)]$ .

1.  $\mathcal{L}[e^{at}g(t)] = G(s - a)$
2.  $\mathcal{L}[g(t)H(t - a)] = e^{-as}\mathcal{L}[g(t + a)] \quad (a > 0)$
3.  $\mathcal{L}[f(t - a)H(t - a)] = e^{-as}F(s) \quad (a > 0)$
4.  $\mathcal{L}[t^n] = \frac{n!}{s^{n+1}}, \quad n = 0, 1, \dots$
5.  $\mathcal{L}[e^{at}] = \frac{1}{s - a}, \quad s > a$
6.  $\mathcal{L}[\sin kt] = \frac{k}{s^2 + k^2}$
7.  $\mathcal{L}[\cos kt] = \frac{s}{s^2 + k^2}$
8.  $\mathcal{L}[\delta(t - a)] = e^{-as} \quad (a \geq 0)$