

Laplace Transform Reference

1. $\mathcal{L} [e^{at}] = \frac{1}{s - a}$
2. $\mathcal{L} [t^n] = \frac{n!}{s^{n+1}}$
3. $\mathcal{L} [\sin(\omega t)] = \frac{\omega}{s^2 + \omega^2}$
4. $\mathcal{L} [\cos(\omega t)] = \frac{s}{s^2 + \omega^2}$
5. $\mathcal{L} [e^{at} \sin(\omega t)] = \frac{\omega}{(s - a)^2 + \omega^2}$
6. $\mathcal{L} [e^{at} \cos(\omega t)] = \frac{s - a}{(s - a)^2 + \omega^2}$
7. $\mathcal{L} [u_a(t)] = \frac{e^{-as}}{s}$
8. $\mathcal{L} [\delta_a(t)] = e^{-as}$
9. $\mathcal{L} [y'] = s\mathcal{L} [y] - y(0)$
10. $\mathcal{L} [y''] = s^2\mathcal{L} [y] - sy(0) - y'(0)$
11. $\mathcal{L} [u_a(t)f(t - a)] = e^{-as}\mathcal{L} [f(t)]$
12. $\mathcal{L} [e^{at}f(t)] = F(s - a)$, where $F(s) = \mathcal{L} [f(t)]$

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