

DO NOT MAKE ANY MARKS ON THIS TABLE!

A TABLE OF LAPLACE TRANSFORMS

$f(t)$	$F(s) = \mathcal{L}\{f\}(s)$	$f(t)$	$F(s) = \mathcal{L}\{f\}(s)$
1. $f(at)$	$\frac{1}{a} F\left(\frac{s}{a}\right)$	19. $\frac{1}{\sqrt{t}}$	$\frac{\sqrt{\pi}}{\sqrt{s}}$
2. $e^{at}f(t)$	$F(s-a)$	20. \sqrt{t}	$\frac{\sqrt{\pi}}{2s^{3/2}}$
3. $f'(t)$	$sF(s) - f(0)$	21. $t^{n-(1/2)}, \quad n = 1, 2, \dots$	$\frac{1 \cdot 3 \cdot 5 \cdots (2n-1)\sqrt{\pi}}{2^n s^{n+(1/2)}}$
4. $f^{(n)}(t)$	$s^n F(s) - s^{n-1}f(0) - s^{n-2}f'(0) - \dots - sf^{(n-2)}(0) - f^{(n-1)}(0)$	22. $t^r, \quad r > -1$	$\frac{\Gamma(r+1)}{s^{r+1}}$
5. $t^n f(t)$	$(-1)^n F^{(n)}(s)$	23. $\sin bt$	$\frac{b}{s^2 + b^2}$
6. $\frac{1}{t} f(t)$	$\int_s^\infty F(u) du$	24. $\cos bt$	$\frac{s}{s^2 + b^2}$
7. $\int_0^t f(v) dv$	$\frac{F(s)}{s}$	25. $e^{at} \sin bt$	$\frac{b}{(s-a)^2 + b^2}$
8. $(f * g)(t)$	$F(s)G(s)$	26. $e^{at} \cos bt$	$\frac{s-a}{(s-a)^2 + b^2}$
9. $f(t+T) = f(t)$	$\frac{\int_0^T e^{-st} f(t) dt}{1 - e^{-sT}}$	29. $\sin bt - bt \cos bt$	$\frac{2b^3}{(s^2 + b^2)^2}$
10. $f(t-a)u(t-a), \quad a \geq 0$	$e^{-as}F(s)$	30. $t \sin bt$	$\frac{2bs}{(s^2 + b^2)^2}$
11. $g(t)u(t-a), \quad a \geq 0$	$e^{-as}\mathcal{L}\{g(t+a)\}(s)$	31. $\sin bt + bt \cos bt$	$\frac{2bs^2}{(s^2 + b^2)^2}$
12. $u(t-a), \quad a \geq 0$	$\frac{e^{-as}}{s}$	32. $t \cos bt$	$\frac{s^2 - b^2}{(s^2 + b^2)^2}$
13. $\delta(t-a), \quad a \geq 0$	e^{-as}		
14. e^{at}	$\frac{1}{s-a}$		
15. $t^n, \quad n = 1, 2, \dots$	$\frac{n!}{s^{n+1}}$		
16. $e^{at}t^n, \quad n = 1, 2, 3, \dots$	$\frac{n!}{(s-a)^{n+1}}$		
17. $e^{at} - e^{bt}$	$\frac{(a-b)}{(s-a)(s-b)}$		
18. $ae^{at} - be^{bt}$	$\frac{(a-b)s}{(s-a)(s-b)}$		