

## Laplace getransformeerde

$f(t)$	$F(s) = \mathcal{L}[f(t)] = \int_0^\infty f(t)e^{-st} dt$
1. 1	$\frac{1}{s}, s > 0$
2. $t$	$\frac{1}{s^2}, s > 0$
3. $t^n$ ( $n = 0, 1, 2, \dots$ )	$\frac{n!}{s^{n+1}}, s > 0$
4. $e^{at}$	$\frac{1}{s-a}, s > a$
5. $\sin at$	$\frac{a}{s^2 + a^2}, s > 0$
6. $\cos at$	$\frac{s}{s^2 + a^2}, s > 0$
7. $e^{at} \sin bt$	$\frac{b}{(s-a)^2 + b^2}, s > a$
8. $e^{at} \cos bt$	$\frac{s-a}{(s-a)^2 + b^2}, s > a$
9. $t^n e^{at}$	$\frac{n!}{(s-a)^{n+1}}, s > a$
10. $f'(t)$	$sF(s) - f(0)$
11. $f''(t)$	$s^2F(s) - sf(0) - f'(0)$
12. $f(t-a)u_a(t)$	$e^{-as}F(s)$
13. $e^{at}f(t)$	$F(s-a)$ (vgl. 3+9)
14. $\delta(t-a)$	$e^{-as}$
15. $(-t)^n f(t)$	$F^{(n)}(s)$ ( $n$ -de afgeleide)
16. $(f * g)(t)$	$F(s)G(s)$

Opm:  $(f * g)(t) = \int_0^t f(u)g(t-u) du.$

## Gonioformules

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1.  $\sin(\alpha + \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha$
  2.  $\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$
  3.  $\cos \alpha \cos \beta = \frac{1}{2}(\cos(\alpha + \beta) + \cos(\alpha - \beta))$
  4.  $\sin \alpha \sin \beta = \frac{1}{2}(\cos(\alpha - \beta) - \cos(\alpha + \beta))$
  5.  $\sin \alpha \cos \beta = \frac{1}{2}(\sin(\alpha + \beta) + \sin(\alpha - \beta))$
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## Integraaltabelletje

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1.  $\int t \sin(at) dt = \frac{1}{a^2} \sin(at) - \frac{t}{a} \cos(at), \quad (a \neq 0)$
  2.  $\int t^2 \sin(at) dt = \left(\frac{2}{a^3} - \frac{t^2}{a}\right) \cos(at) + \frac{2t}{a^2} \sin(at),$
  3.  $\int t \cos(at) dt = \frac{1}{a^2} \cos(at) + \frac{t}{a} \sin(at),$
  4.  $\int t^2 \cos(at) dt = \left(\frac{-2}{a^3} + \frac{t^2}{a}\right) \sin(at) + \frac{2t}{a^2} \cos(at),$
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