Laplace Transforms

On the left are functions $y(t)$, and on the right, their Laplace transforms $Y(s)$. $F(s)$ always stands for the Laplace transform of $f(t)$, and $G(s)$ for the Laplace transform of $g(t)$. $\delta_a(t)$ is the Dirac delta function at $t-a$, $a \geq 0$ and $h_a(t)$ is the Heaviside function at $t-a$, $a \geq 0$.

$\mathbf{y(t)} = \mathcal{L}^{\mathbf{-1}}\{\mathbf{Y(s)}\}$	$\mathbf{Y(s)} = \mathcal{L}\{\mathbf{y(t)}\}$
$t^n, \quad n = 0, 1, 2, \ldots$	$\frac{n!}{s^{n+1}}, \quad s > 0$
$t^a, \quad a > -1$	$\frac{\Gamma(a+1)}{s^{a+1}}, \quad s > 0$
e^{at}	$\frac{1}{s-a}, \quad s > a$
$\sin bt$	$\frac{b}{s^2+b^2}, \quad s > 0$
$\cos bt$	$\frac{s}{s^2+b^2}, \quad s > 0$
$\sinh bt$	$\frac{b}{s^2-b^2}, \quad s > \lvert b \rvert$
$\cosh bt$	$\frac{s}{s^2-b^2}, \quad s > \lvert b \rvert$
$e^{at} f(t)$	$F(s-a), \quad s > a$
$t^n f(t)$	$(-1)^n \frac{d^n}{ds^n} F(s), \quad s > 0$
$f'(t)$	$-f(0) + sF(s)$
$f''(t)$	$-f'(0) - sf(0) + s^2 F(s)$
$(f * g)(t)$	$F(s)G(s)$
$\int_0^t f(u)\, du$	$\frac{F(s)}{s}, \quad s > 0$
$\frac{f(t)}{t}$	$\int_s^\infty F(\sigma)\, d\sigma, \quad s > 0$
$f(t-a)h_a(t)$	$e^{-as} F(s)$
$\delta_a(t)$	e^{-as}