Some Laplace transforms

Definition of Laplace transform: $\mathcal{L}(f(t)) = \int_0^\infty e^{-st} f(t)dt$

$f(t)$	$F(s)$
0	0
1	$\frac{1}{s}, \quad s > 0$
e^{at}	$\frac{1}{s-a}, \quad s > a$
$t^n, \quad n = 1,2,3,\ldots$	$\frac{n!}{s^{n+1}}, \quad s > 0$
$\sin(at)$	$\frac{a}{s^2+a^2}, \quad s > 0$
$\cos(at)$	$\frac{s}{s^2+a^2}, \quad s > 0$
$e^{at}\sin(bt)$	$\frac{b}{(s-a)^2+b^2}, \quad s > a$
$e^{at}\cos(bt)$	$\frac{s-a}{(s-a)^2+b^2}, \quad s > a$
$e^{ct} f(t)$	$F(s-c)$
$f'(t)$	$sF(s) - f(0)$
$f''(t)$	$s^2F(s) - sf(0) - f'(0)$
$f^{(n)}(t)$	$s^nF(s) - s^{n-1}f(0) - \cdots - f^{(n-1)}(0)$
$u_c(t)$	$e^{-cs}\frac{1}{s}$
$u_c(t)f(t-c)$	$e^{-cs}F(s)$
$\delta(t-c)$	e^{-cs}
t^p (where $\Gamma(p+1) = \int_0^\infty e^{-x}x^p dx$)	$\frac{\Gamma(p+1)}{s^{p+1}}, \quad s > 0$
$\int_0^t f(t-u)g(u)du$	$F(s)G(s)$