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	$\frac{1}{s}, \quad s > 0$
$t^n, \quad n = 0, 1, 2, \ldots$	$\frac{n!}{s^{n+1}}, \quad s > 0$
e^{at}	$\frac{1}{s-a}, \quad s > a$
$\sin(at)$	$\frac{a}{s^2+a^2}, \quad s > 0$
$\cos(at)$	$\frac{s}{s^2+a^2}, \quad s > 0$
$e^{ct} f(t)$	$F(s-c)$
$t^n e^{at}$	$\frac{n!}{(s-a)^{n+1}}$
$e^{at}\sin(bt)$	$\frac{b}{(s-a)^2+b^2}, \quad s > a$
$e^{at}\cos(bt)$	$\frac{s-a}{(s-a)^2+b^2}, \quad s > a$
$f'(t)$	$sF(s) - f(0)$
$f''(t)$	$s^2F(s) - sf(0) - f'(0)$
$f^{(n)}(t)$	$s^nF(s) - s^{n-1}f(0) - \cdots - f^{(n-1)}(0)$
$-tf(t)$	$F'(s)$
$t^n f(t)$	$(-1)^n F^{(n)}(s)$
$t \sin at$	$\frac{2as}{(s^2+a^2)^2}$
$t \cos at$	$\frac{s^2-a^2}{(s^2+a^2)^2}$

$f(t)$	$F(s)$
$\sinh(at)$	$\frac{a}{s^2 - a^2}, \quad s > \|a\|$
$\cosh(at)$	$\frac{s}{s^2 - a^2}, \quad s > \|a\|$
t^p	$\frac{\Gamma(p+1)}{s^{p+1}}, \quad s > 0$
(where $\Gamma(k) = \int_0^\infty e^{-x} x^{k-1} dx$)	
$x^{-1/2}$	$\frac{\sqrt{\pi}}{\sqrt{s}}$
$\int_0^t f(u)\, du$	$\frac{F(s)}{s}$
$\frac{f(t)}{t}$	$\int_s^\infty F(p)\, dp$
$\int_0^t f(t-u) g(u) du$	$F(s)G(s)$
$u(t-c)$	$e^{-cs} \frac{1}{s}$
$u(t-c) f(t-c)$	$e^{-cs} F(s)$
$\delta(t-c)$	e^{-cs}