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Information for exam #1

Function	Laplace Transform
$f(t)$	$F(s) = \int_0^\infty e^{-st} f(t)\,dt$
$af(t) + bg(t)$	$aF(s) + bG(s)$
t^n (pos. int. n)	$\frac{n!}{s^{n+1}}$
e^{at}	$\frac{1}{s-a}$
$\sin(at)$	$\frac{a}{s^2+a^2}$
$\cos(at)$	$\frac{s}{s^2+a^2}$
$\frac{1}{a-b}(e^{at} - e^{bt})$	$\frac{1}{(s-a)(s-b)}$
$\frac{1}{a-b}(ae^{at} - be^{bt})$	$\frac{s}{(s-a)(s-b)}$
$e^{at}f(t)$	$F(s-a)$
$H(t-a)f(t-a)$	$e^{-as}F(s)$
$f'(t)$	$sF(s) - f(0^+)$
$f^{(n)}(t)$	$s^nF(s) - s^{n-1}f(0) - \ldots - f^{(n-1)}(0)$
$(f * g)(t) = \int_0^t f(t-\tau)g(\tau)\,d\tau$	$F(s)G(s)$
$\delta(t-a)$	e^{-as}
$\int_0^t f(w)\,dw$	$\frac{1}{s}F(s)$
$t^n f(t)$	$(-1)^n \frac{d^n}{ds^n}F(s)$
$f(t+\tau) = f(t)$ (periodic)	$\frac{1}{1-e^{-\tau s}} \int_0^\tau e^{-st}\,dt$

$$\sin(A+B) = \sin A \cos B + \cos A \sin B$$
$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$