ME 303 Advanced Engineering Mathematics

Table of Laplace Transforms

Some inverse Laplace transforms for solutions of the one-dimensional diffusion equation.

$F(s)$	$f(t)$
$e^{-a\sqrt{s}}, \quad a > 0$	$\dfrac{a}{2\sqrt{\pi t^3}} \exp(-\dfrac{a^2}{4t})$
$\dfrac{1}{s} e^{-a\sqrt{s}}, \quad a > 0$	$erfc\left(\dfrac{a}{2\sqrt{t}}\right)$
$\dfrac{1}{\sqrt{s}} e^{-a\sqrt{s}}, \quad a > 0$	$\dfrac{1}{\sqrt{\pi t}} \exp\left(-\dfrac{a^2}{4t}\right)$
$s^{-3/2} e^{-a\sqrt{s}}, \quad a > 0$	$2\sqrt{\dfrac{t}{\pi}} \exp\left(-\dfrac{a^2}{4t}\right) - a erfc\left(\dfrac{a}{2\sqrt{t}}\right)$
$\dfrac{b e^{-a\sqrt{s}}}{s(b+\sqrt{s})}, \quad a > 0$	$-e^{ab} e^{b^2 t} erfc\left(b\sqrt{t} + \dfrac{a}{2\sqrt{t}}\right) + erfc\left(\dfrac{a}{2\sqrt{t}}\right)$