Laplace Trasnform

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Both Laplace Transform and ints inverse are defiend as follows:

$$\mathcal{L}\{f(t)\} = F(s) = \int_0^\infty f(t)e^{-st}dt \tag{1}$$

$$f(t) = \mathcal{L}^{-1}\{F(s)\} = \frac{1}{2\pi}\lim_{Y\to+\infty}\int_{-Y}^{Y} F(\sigma+i\xi)e^{t(\sigma+i\xi)}d\xi \tag{2}$$