Convolution

$(f * g)(t) = \int_{-\infty}^{\infty} f(\tau)g(t-\tau)d\tau$, additionally for $f, g : [0, \infty) \to \mathbb{R}$ borders are from 0 to t.

Laplace Transform

$F(s) = \mathcal{L}(f(t)) = \int_{0}^{\infty} f(t)e^{-st}dt$ is the Laplace transform of $f(t)$.

0.1 Rules

- $\mathcal{L}(y(t)) = Y(s)$
- $\mathcal{L}(y'(t)) = s \cdot Y(s)$

Misc

$y(t)$ is output, $u(t)$ is input. Transfer function: $G(s) = \frac{Y(s)}{U(s)}$