Definição da Transformada bilateral de Laplace: $X(s) = \mathcal{L}\{x(t)\} = \int_{-\infty}^{+\infty} x(t)exp(-st)dt\ ,\ \ s \in \Omega_{\mathrm{x}}$
Resumo das Propriedades da transformada de Laplace:
Deslocamento no tempo: $\mathcal{L}\{x(t-\tau)\} = X(s)\mathrm{exp}\,(-s\tau)\ ,\ \ s \in \Omega_{\mathrm{x}}$
Convolução: $\mathcal{L}\{x_1(t) * x_2(t)\} = \mathcal{L}\{x_1(t)\}\mathcal{L}\{x_2(t)\} = X_1(s)X_2(s)\ ,\ \ s \in \Omega_{x_1} \cap \Omega_{x_2}$
Área da Função: $\int_{-\infty}^{+\infty} x(t)dt = X(0)$ se $s = 0 \in \Omega_x$
Impulso: $\mathcal{L}\{\delta(t)\} = 1, s \in \mathbb{C}$
Degrau: $\mathcal{L}\{u(t)\} = \frac{1}{s}, Re(s) > 0$
Exponencial: $\mathcal{L}\{\mathrm{exp}(\lambda t)\, u(t)\} = \frac{1}{s-\lambda}, Re(s) > \lambda$
Linearidade: $\mathcal{L}\{af_1(t) + bf_2(t)\} = aF_1(s) + bF_2(s), \Omega_{x+y}\ contém\ \Omega_x \cap \Omega_y$
Cosseno: $\mathcal{L}\{\cos(\beta t)u\,(t)\} = \frac{s}{s^2+\beta^2},\ \ Re(s) > 0$
Seno: $\mathcal{L}\{\mathrm{sen}(\beta t)u\,(t)\} = \frac{\beta}{s^2+\beta^2},\ \ \ Re(s) > 0$
Integral: $\mathcal{L}\left\{y(t) = \int_{-\infty}^{t} x(\beta)d\beta\right\} = \frac{1}{s}\mathcal{L}\{x(t)\} = \frac{1}{s}X(s),\ \Omega_y\ contém\ \Omega_x \cap Re(s) > 0$
Potência de t: $\mathcal{L}\left\{\frac{t^m}{m!}u(t)\right\} = \frac{1}{s^{m+1}},\ \ Re(s) > 0$
Reversão no tempo: $\mathcal{L}\{x(-t)\} = X(-s),\ \ \ -s \in \Omega_x$
Deslocamento em s: $\mathcal{L}\{y(t) = \mathrm{exp}\,(-at)x(t)\} = X(s+a)\ ,\ \ (s+a) \in \Omega_{\mathrm{x}}$
Cosseno com exponencial: $\mathcal{L}\{\cos(\beta t)\mathrm{exp}\,(-at)u\,(t)\} = \frac{s+a}{(s+a)^2+\beta^2},\ \ Re(s+a) > 0$
Seno com exponencial: $\mathcal{L}\{\mathrm{sen}(\beta t)\mathrm{exp}\,(-at)u\,(t)\} = \frac{\beta}{(s+a)^2+\beta^2},\ \ Re(s+a) > 0$
Derivada em s: $\mathcal{L}\{y(t) = t^m x(t)\} = (-1)^m \frac{d^m X(s)}{ds^m}\ ,\ \ \Omega_y = \Omega_x$
Derivada em t: $\mathcal{L}\{\dot{x}(t)\} = sX(s),\ \ \Omega_{\dot{x}}\ contém\ \Omega_x$