$$x(t) = \frac{d}{dt}\left\{ t \cdot e^{-6t} \cdot u(t) \right\} * u(t-2)$$

$y(t)$ $\qquad$ $z(t)$

$$\mathcal{L}\{x(t)\} = \mathcal{L}\{ y(t) * z(t) \} = Y(s) \cdot Z(s)$$

$$Y(s) = \mathcal{L}\left\{ \frac{d}{dt}\left(t \cdot e^{-6t} \cdot u(t) \right) \right\}$$

Propriedades:

$$\mathcal{L}\{x(t)\} = X(s)$$

$$\begin{cases} \mathcal{L}\{x'\} = s \cdot X(s) \\ \mathcal{L}\{x \cdot e^{\alpha t}\} = X(s-\alpha) \\ \mathcal{L}\{t \cdot u(t)\} = \frac{1}{s^2} \end{cases}$$

$$\Rightarrow Y(s) = s \cdot \frac{1}{(s+6)^2}$$

$$Z(s) = \mathcal{L}\{ u(t-2) \}, \text{ como } \mathcal{L}\{x(t-\beta)\} = X(s) \cdot e^{-\beta s}$$

$$\mathcal{L}\{u(t)\} = \frac{1}{s}$$

$$Z(s) = \frac{e^{-2s}}{s}$$

$$\therefore X(s) = Y(s) \cdot Z(s) = \frac{e^{-2s}}{s} \cdot \frac{s}{(s+6)^2} = \frac{e^{-2s}}{(s+6)^2}$$