4) $L(f') = sL(f) - f(0)$

5) $L\left(\int_0^t f(\tau)\,d\tau\right) = \frac{F(s)}{s}$

6) $L(tf(t)) = -F'(s)$

$L^{-1}\left(\frac{1}{(s^2+\beta^2)^2}\right)$, $L^{-1}\left(\frac{s^2}{(s^2+\beta^2)^2}\right)$

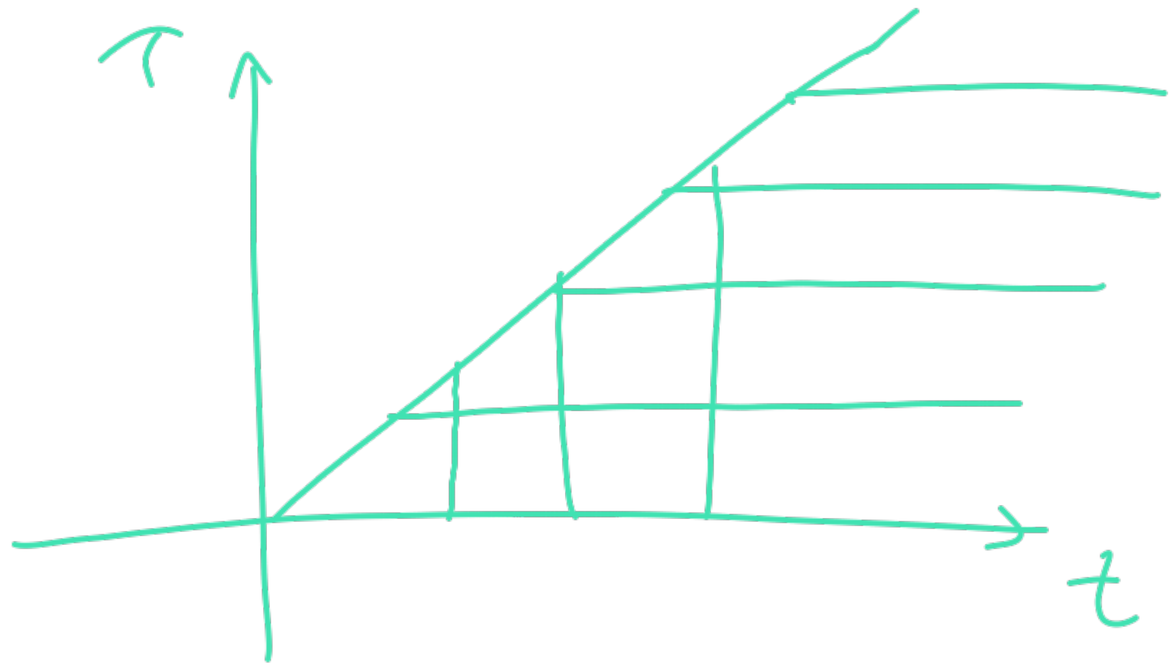
7) $L\left(\frac{f(t)}{t}\right) = \int_{\tilde{s}}^{\infty} F(s)\,ds$

$c < d$, $u_c - u_d$

9) $\mathcal{L}(f * g) = \mathcal{L}(f)\,\mathcal{L}(g)$

$$\sin t * 1 = \int_0^t \sin(t-\tau)\,d\tau = \cos(t-\tau)\Big|_0^t = \cos 0 - \cos t = 1 - \cos t$$

$$F(s)\,G(s) = \int_0^\infty e^{-s\tau} f(\tau)\,d\tau\; G(s) = \int_0^\infty \left(e^{-s\tau} G(s)\right) f(\tau)\,d\tau$$



$$L(f)L(g) = L(f * g)$$