

TRANSFORMS OF DERIVATIVES

$$\mathcal{L}(f^{(n)}(t)) = s^n F(s) - s^{n-1} f(0) - s^{n-2} f'(0) - \dots - s f^{(n-2)}(0) - f^{(n-1)}(0)$$

$$\mathcal{L}(f'(t)) = sF(s) - f(0)$$

TRANSFORMS OF INTEGRALS

$$\mathcal{L}\left(\int_0^t f(z) dz\right) = \frac{F(s)}{s}$$

REMEMBER

$$\mathcal{L}(f(t))(s) = F(s)$$

TRANSLATION ON THE S-AXIS

$$\mathcal{L}(e^{at} f(t)) = F(s-a)$$

TRANSLATION ON THE t-AXIS

$$\mathcal{L}(u(t-a) f(t-a)) = e^{-as} F(s)$$

u is
step function!

DIFFERENTIATION OF TRANSFORMS

$$\mathcal{L}(t f(t)) = -F'(s)$$

INTEGRATION OF TRANSFORMS

$$\mathcal{L}\left(\frac{f(t)}{t}\right) = \int_s^\infty F(\sigma) d\sigma$$