Laplace transform table

$$\mathscr{L}\{1\}(s) = \frac{1}{s}$$

$$\mathscr{L}\{e^{at}\}(s) = \frac{1}{s-a}$$

$$\mathscr{L}\{t^n\}(s) = \frac{n!}{s^{n+1}}, \quad n = 1, 2, \dots$$

$$\mathscr{L}\{\sin bt\}(s) = \frac{b}{s^2+b^2}$$

$$\mathscr{L}\{\cos bt\}(s) = \frac{s}{s^2+b^2}$$

$$\mathscr{L}\{e^{at}t^n\}(s) = \frac{n!}{(s-a)^{n+1}}, \quad n = 1, 2, \dots$$

$$\mathscr{L}\{e^{at}\sin bt\}(s) = \frac{b}{(s-a)^2+b^2}$$

$$\mathscr{L}\{e^{at}\cos bt\}(s) = \frac{s-a}{(s-a)^2+b^2}$$

$$\mathscr{L}\{f+g\} = \mathscr{L}\{f\} + \mathscr{L}\{g\}$$

$$\mathscr{L}\{cf\} = c\mathscr{L}\{f\} \quad \text{for any constant } c$$

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

$$\mathscr{L}\{f'\}(s) = s\mathscr{L}\{f\}(s) - f(0)$$

$$\mathscr{L}\{f''\}(s) = s^2\mathscr{L}\{f\}(s) - sf(0) - f'(0)$$

$$\mathscr{L}\{f^{(n)}\}(s) = s^n\mathscr{L}\{f\}(s) - s^{n-1}f(0) - s^{n-2}f'(0) - \cdots - f^{(n-1)}(0)$$

$$\mathscr{L}\{t^n f(t)\}(s) = (-1)^n \frac{d^n}{ds^n}\big(\mathscr{L}\{f\}(s)\big)$$

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

$$\mathscr{L}\{g(t)u(t-a)\}(s) = e^{-as}\mathscr{L}\{g(t+a)\}(s)$$

$$\mathscr{L}\{f\}(s) = \frac{\int_0^T e^{-st}f(t)\,dt}{1-e^{-sT}} \quad \text{for } f \text{ of period } T$$

$$\mathscr{L}\{f*g\}(s) = \big(\mathscr{L}\{f\}(s)\big)\big(\mathscr{L}\{g\}(s)\big)$$