13. Gyak.

Laplace transzformált alkalmazása

1. $\mathcal{L}(2t \cdot e^{3t})(s) = ?,\ \mathcal{L}(f(t))(s) = e^{-2s}\frac{3}{s(s+1)},\ f(t) = ?$
2. $\mathcal{L}(t^2 \sinh 2t)(s) = ?,\ \mathcal{L}(f(t))(s) = \frac{e^{-2s}-e^{-4s}}{s},\ f(t) = ?$
3. $\mathcal{L}\left(\int_0^t \tau \cos\tau \,\mathrm{d}\,\tau\right)(s) = ?$
4. $\mathcal{L}\left(\frac{1}{t}\sin 2t\right)(s) = ?$
5. $2 * e^{-t} = ?,\ \mathcal{L}\left(2 * e^{-t}\right)(s) = ?$
6. $\sin t * t = ?,\ \mathcal{L}\left(\sin t * t\right)(s) = ?$
7. $y'(t) + \int_0^t y(\tau)\cosh(t-\tau)\,\mathrm{d}\,\tau = 0,\ y(0) = 1,\ y(t) = ?$
8. $\sinh t - t = \int_0^t \cosh\tau \cdot x(t-\tau)\,\mathrm{d}\,\tau = 0,\ x(t) = ?$
9. $\ddot{x} + \dot{x} - 12x = f(t),\ x(0) = \dot{x}(0) = 0$

$$f(t) = \begin{cases} 1-t & \text{ha } 0 < t < 2 \\ 0 & \text{különben} \end{cases}$$