

7.4.14.

$$L \int_0^t \tau \sin \tau d\tau = L \int_0^t 1 \tau \sin \tau d\tau = L\{1\}L\{t \sin t\} =$$

$$= L\{1\}L\{t \sin t\} = \frac{1}{s} \left(-\frac{d}{ds} L\{\sin t\} \right) =$$

$$= \frac{1}{s} \left(-\frac{d}{ds} \frac{1}{s^2 + 1} \right) = \frac{1}{s} \left(-\frac{-2s}{(s^2 + 1)^2} \right) = \frac{2}{(s^2 + 1)^2}$$

Alternativ

$$f(t) = \int_0^t \tau \sin \tau d\tau, \quad f(t) = t \sin t, \quad f(0) = 0$$

$$L\{f(t)\} = sL\{f(t)\} - f(0) = sL\{f(t)\}$$

$$L\{f(t)\} = \frac{1}{s} L\{f(t)\} = \frac{1}{s} L\{t \sin t\} = \dots\dots$$