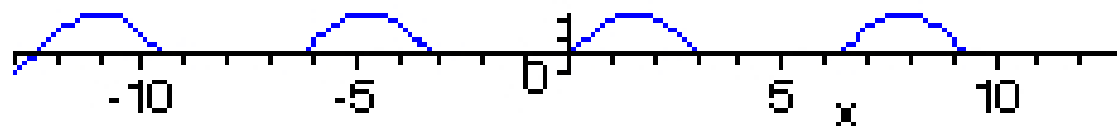7.4.26.

Perioden $T = 2\pi$.

$$L\{f(t)\} = \frac{1}{1 - e^{-s\,2\pi}} \int_0^{2\pi} f(t)e^{-st}dt =$$

$$= \frac{1}{1 - e^{-s2\pi}} \int_0^{\pi} \sin t\; e^{-st}\,dt =$$

$$\int e^{it}e^{-st}dt = \int e^{-(s-i)t}dt = \frac{e^{-(s-i)t}}{-(s-i)} =$$

$$= \frac{-e^{-st}(\cos t + i\sin t)(s+i)}{s^2 + 1} =$$

$$= \frac{1}{1 - e^{-s2\pi}} \left[\frac{-e^{-st}(\cos t + s\sin t)}{s^2 + 1} \right]_0^\pi =$$

$$= \frac{1}{1 - e^{-s2\pi}} \frac{1 + e^{-s\pi}}{s^2 + 1} = \frac{1}{(1 - e^{-s\pi})(s^2 + 1)}$$