

5.2.2 Fourier-muunnospari (jatkoa)

Esim. 5.3

$$\begin{aligned} F(j\omega) &= \int_{-\infty}^{\infty} f(t) e^{-j\omega t} dt = \int_{-T}^T A e^{-j\omega t} dt = \\ &= \left[-\frac{A}{j\omega} (\cos \omega t - j \sin \omega t) \right]_{-T}^T = \\ &= \frac{jA}{\omega} [\cos \omega T - j \sin \omega T - (\cos \omega T + j \sin \omega T)] = \\ &= \frac{2A}{\omega} \sin \omega T \quad (\text{kun } \omega \neq 0) \\ &= 2AT \frac{\sin \omega T}{\omega T} \quad (\text{kun } \omega \neq 0) \end{aligned}$$

ja

$$= 2AT \quad (\text{kun } \omega = 0)$$

Siis

$$F(j\omega) = 2AT \operatorname{sinc}(\omega T)$$