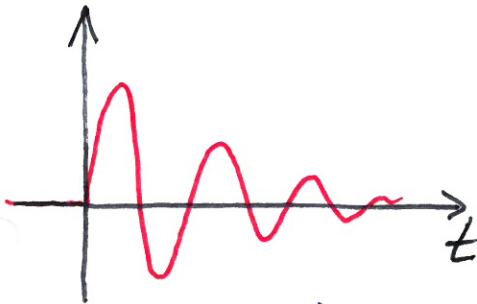
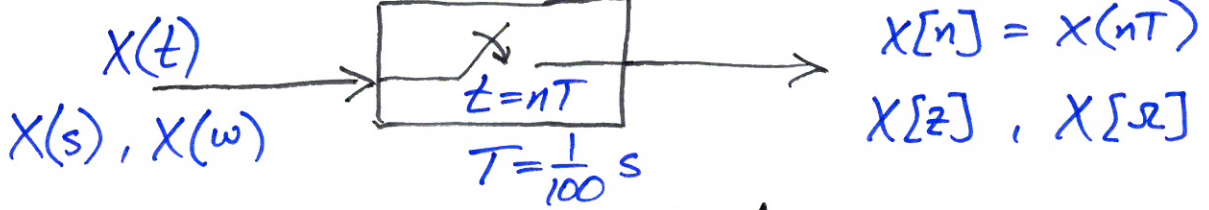


Exempel

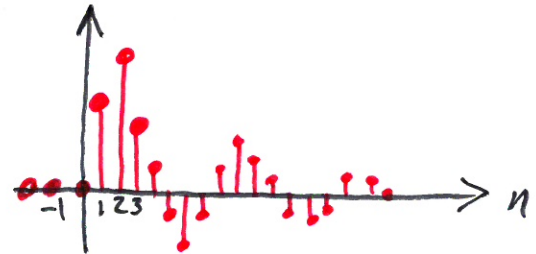
(Spektrumanalys av en tidskontinuerlig signal $x(t)$ genom spektrumanalys av $x[n] = x(nT)$)

Likformig sampling



$$x(t) = e^{-10t} \sin(100t) u(t)$$

($a=10$, $\omega_0=100$ rad/s)



$$x[n] = x(nT) = \left| T = \frac{1}{100} \text{ s} \right| e^{-10 \cdot \frac{n}{100}} \sin\left(100 \cdot \frac{n}{100}\right) u(nT)$$

$$= e^{-10 \cdot \frac{n}{100}} \sin(n) u[n]$$

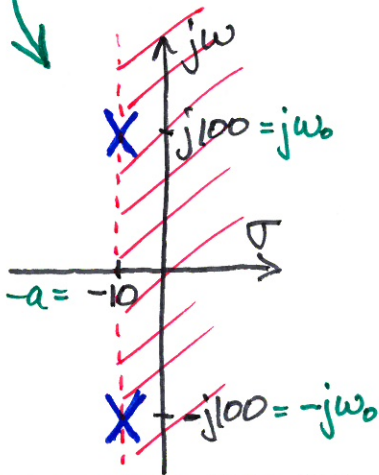
$$= (e^{-10})^n \sin(n) u[n]$$

($\gamma = 0.9$, $\Omega_0 = \omega_0 T = 1$ rad)

Tab. 5:21 \Rightarrow

$$X(s) = \frac{100}{(s+10)^2 + 100^2}$$

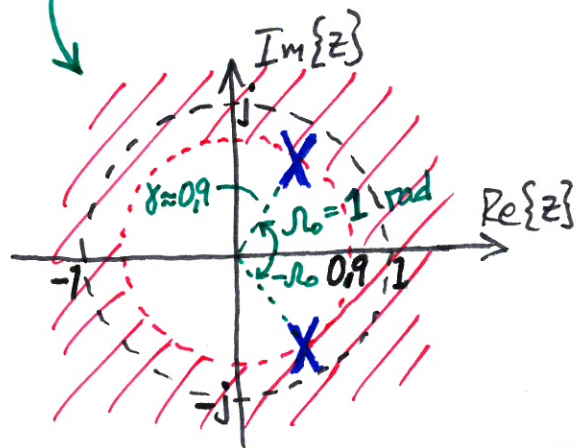
$\text{Re}\{s\} > -10$



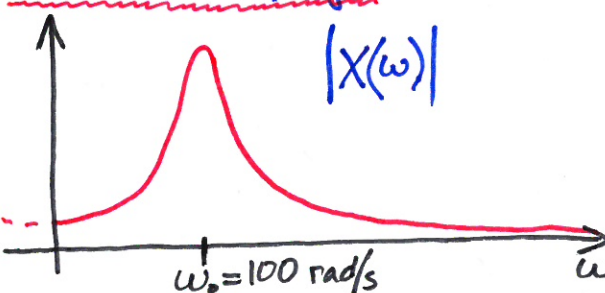
Tab. 10:22 \Rightarrow

$$X[z] = \frac{z \cdot 0.9 \cdot \sin 1}{z^2 - 2 \cdot 0.9 (\cos 1) z + 0.9^2}$$

$|z| > 0.9$



$$X(\omega) = X(s)|_{s=j\omega}$$



$$X[\Omega] = X[z]|_{z=e^{j\Omega}}$$

