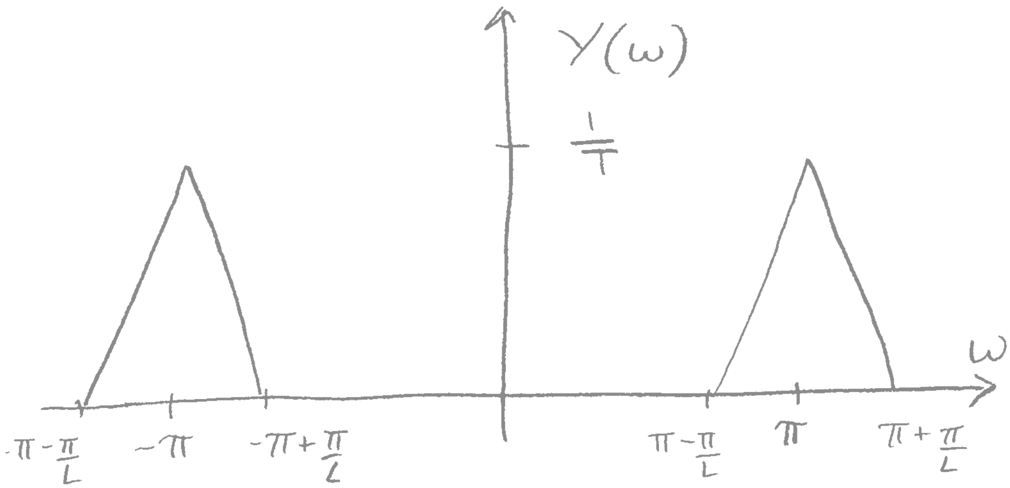
$(-1)^n = (e^{j\pi})^n$

$y[n] = e^{j\pi n} q[n]$ ← frequency shifting property (Line 3 of Table 2.2)

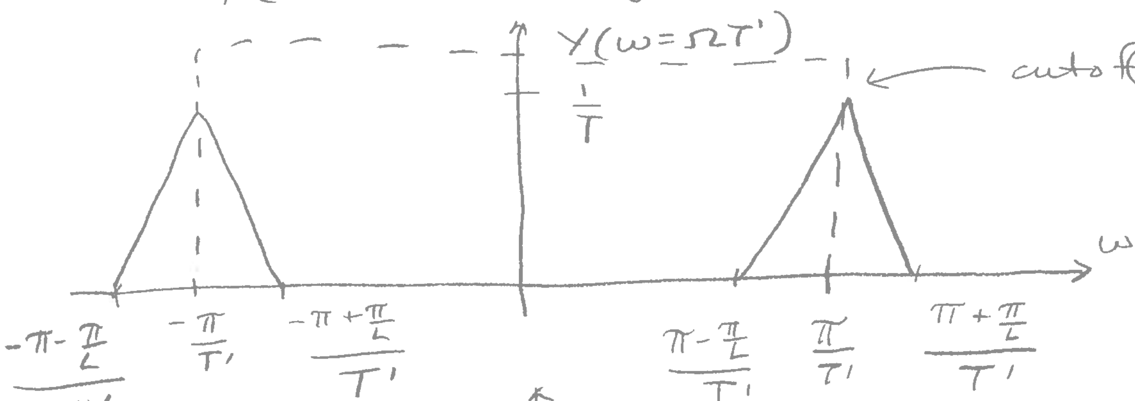
$Y(\omega) = Q(\omega - \pi)$



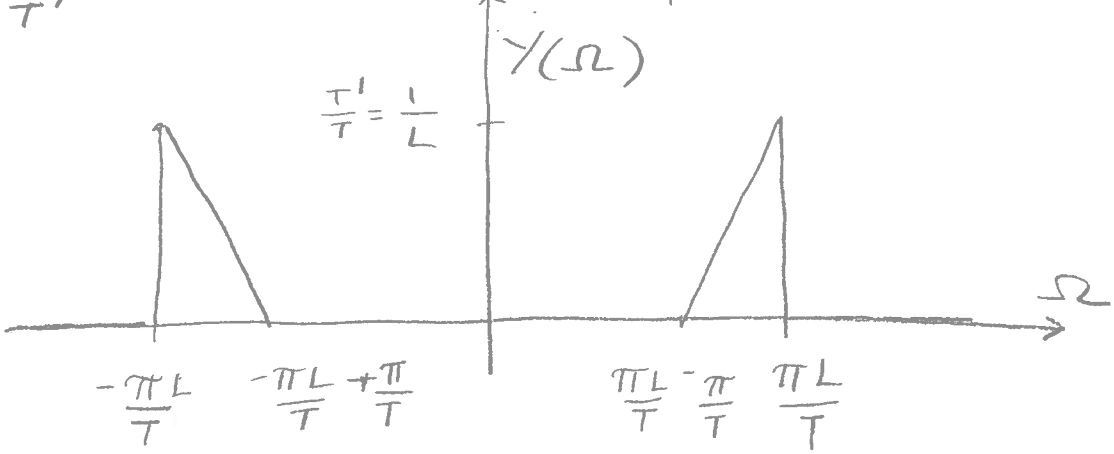
$Y_c(\Omega) = H(\Omega) \cdot Y(\Omega T')$ Note different interpolation period T'!

where $H(\Omega) = \begin{cases} T', & |\Omega| < \frac{\pi}{T'} \\ 0, & \text{otherwise} \end{cases}$

$Y(\Omega T')$ simply squeezes $Y(\omega)$ by T'

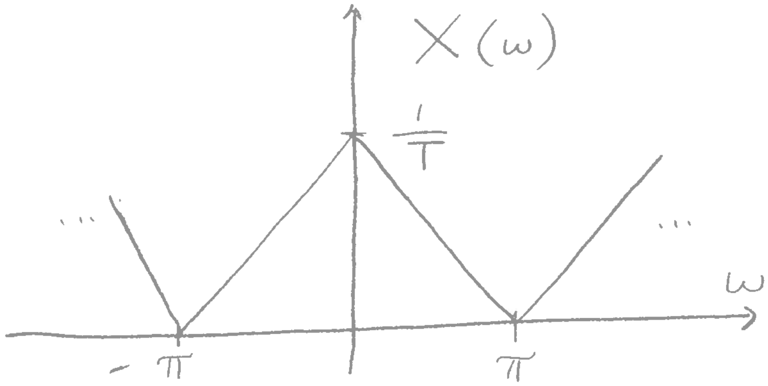


← cutoff for low pass $H(\Omega)$



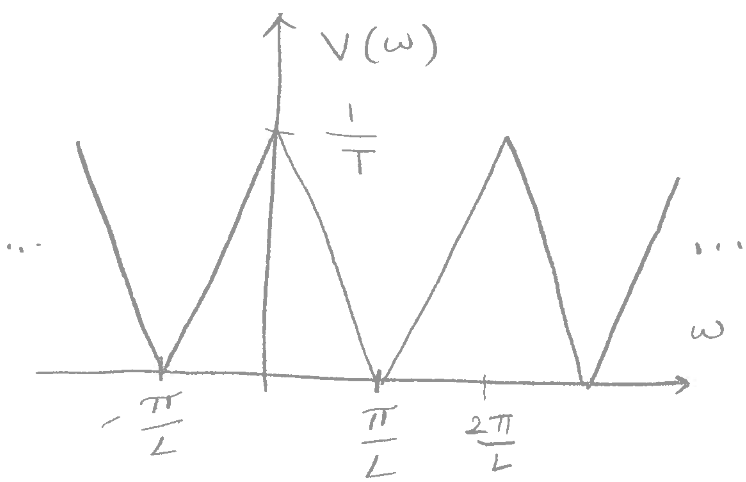
$$X(\omega) = \frac{1}{T} \sum_{k=-\infty}^{\infty} X_c\left(\frac{\omega}{T} - \frac{2\pi k}{T}\right)$$ Eqn. 4.20

scale domain by T!



$$v[n] = \begin{cases} x\left[\frac{n}{L}\right] & n \text{ is multiple of } L \\ 0 & \text{otherwise} \end{cases}$$

$$V(\omega) = X(\omega L)$$ no change in amplitude!



$$Q(\omega) = V(\omega)\,H(\omega) = \begin{cases} V(\omega), & |\omega| < \frac{\pi}{L} \\ 0, & \frac{\pi}{L} < |\omega| < \pi \end{cases}$$