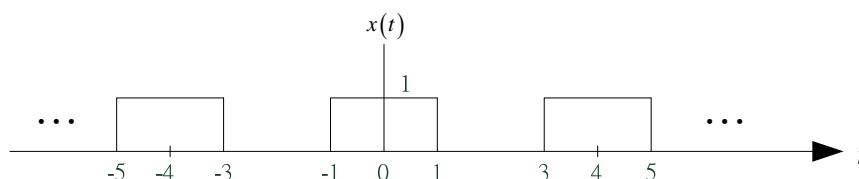# Homework No. 4
Due 18:10, Nov. 26, 2009

※ The codes of your program must be attached. ※

1. Consider the continuous-time periodic square wave shown in the following. The finite Fourier series approximation of $x(t)$ can be expressed as $x_N(t) = \sum_{k=-N}^{N} a_k e^{jk\omega_0 t}$. Plot $x_N(t)$ for $N = 1, 7$, and 49.

2. Consider the descrete-time periodic square wave with period N shown in the following. The truncated Fourier series of $x[n]$ can be expressed as

$$\hat{x}[n] = \begin{cases} \sum_{k=-M}^{M} a_k e^{jk(2\pi/N)n} & \text{if } N \text{ is odd and } M \leq (N-1)/2 \\ \sum_{k=-M+1}^{M} a_k e^{jk(2\pi/N)n} & \text{if } N \text{ is even and } M \leq N/2 \end{cases}$$

. Plot $\hat{x}[n]$ for $M = 1\sim5$.