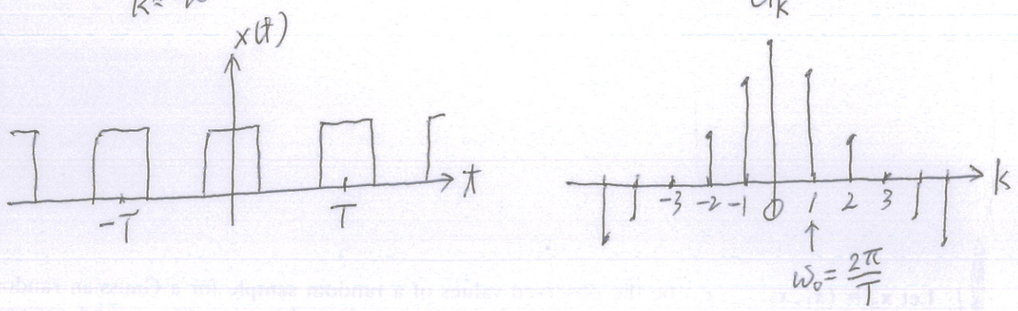
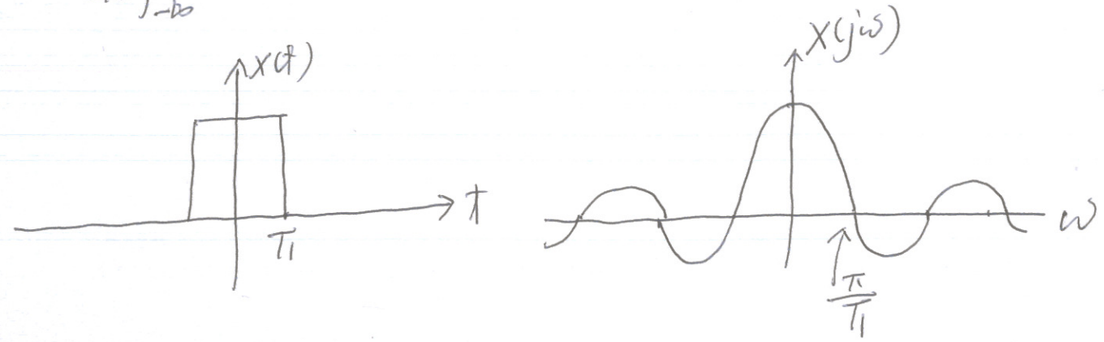
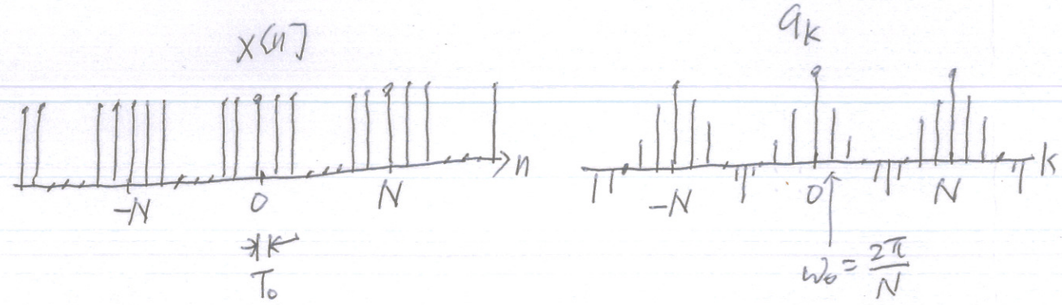
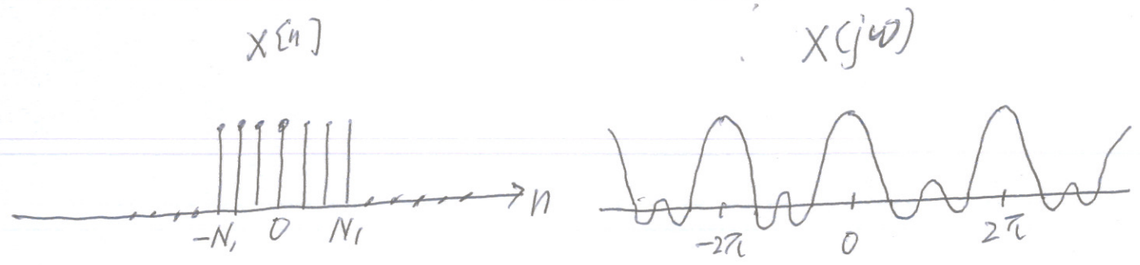
	periodic	Non periodic
continuous	Continuous-time Fourier series $x(t)=\sum_{k=-\infty}^{\infty} a_k e^{jk\omega_0 t} \longleftrightarrow a_k=\frac{1}{T}\int_T x(t)e^{-jk\omega_0 t}dt$ $=\sum_{k=-\infty}^{\infty} a_k e^{jk\frac{2\pi}{T}t}$ 	Fourier transform $x(t)=\frac{1}{2\pi}\int_{-\infty}^{\infty} X(j\omega)e^{j\omega t}d\omega \longleftrightarrow X(j\omega)=\int_{-\infty}^{\infty} x(t)e^{-j\omega t}dt$ 
discrete	discrete-time Fourier series $x[n]=\sum_{k=\langle N\rangle} a_k e^{jk\omega_0 n} \longleftrightarrow a_k=\frac{1}{N}\sum_{n=\langle N\rangle} x[n]e^{-jk\omega_0 n}$ $=\sum_{k=\langle N\rangle} a_k e^{jk\frac{2\pi}{N}n}$  $(\omega_0=\frac{2\pi}{NT_0})$	discrete-time Fourier transform (DTFT) $x[n]=\frac{1}{2\pi}\int_{2\pi} X(e^{j\omega})e^{j\omega n}d\omega \longleftrightarrow X(e^{j\omega})=\sum_{n=-\infty}^{\infty} x[n]e^{-j\omega n}$ 

discrete-Fourier transform (DFT)

$$x[n]=\frac{1}{N}\sum_{k=0}^{N-1} X[k]e^{j\frac{2\pi}{N}kn} \longleftrightarrow X[k]=\sum_{n=0}^{N-1} x[n]e^{-j\frac{2\pi}{N}kn}$$

$$=\frac{1}{N}\sum_{k=0}^{N-1} X[k]W_N^{-kn} \qquad =\sum_{n=0}^{N-1} x[n]W_N^{kn}$$

$W_N=e^{-j\frac{2\pi}{N}}$ $\quad k,n=0,1,\cdots,N-1$