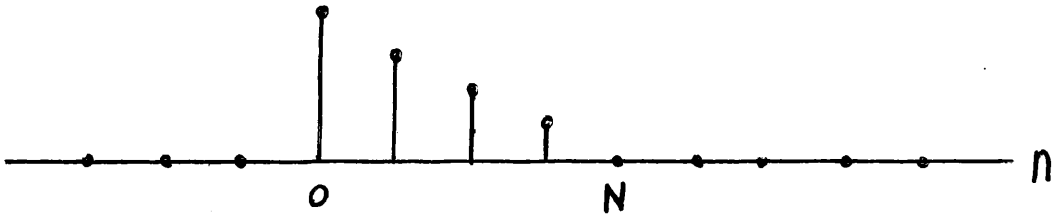
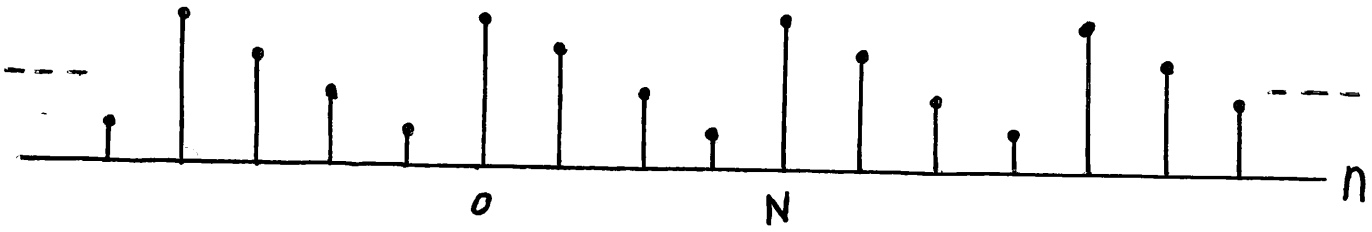
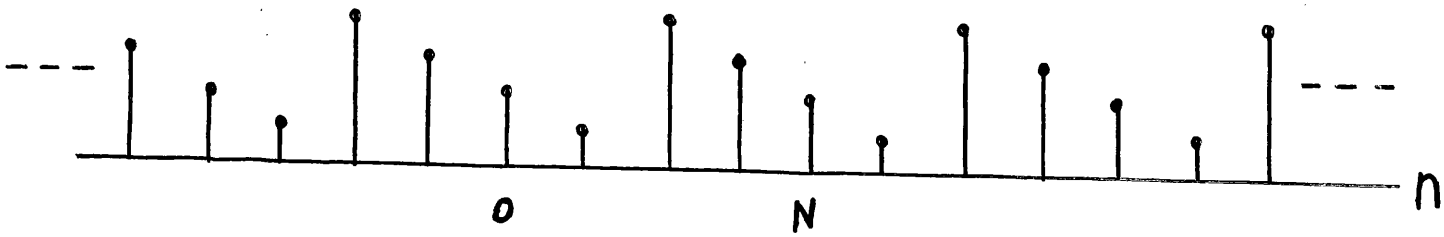
$x[n]$



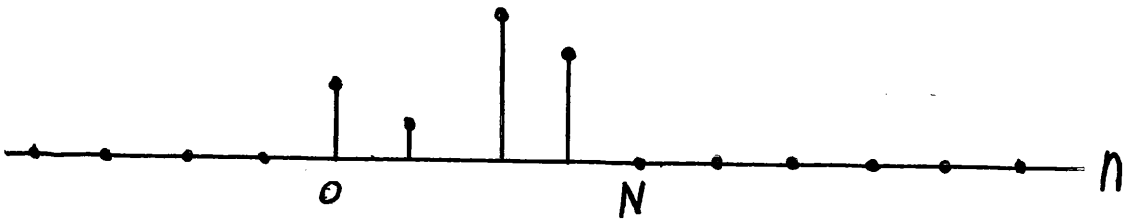
$\tilde{x}[n] = x[((n))_N]$



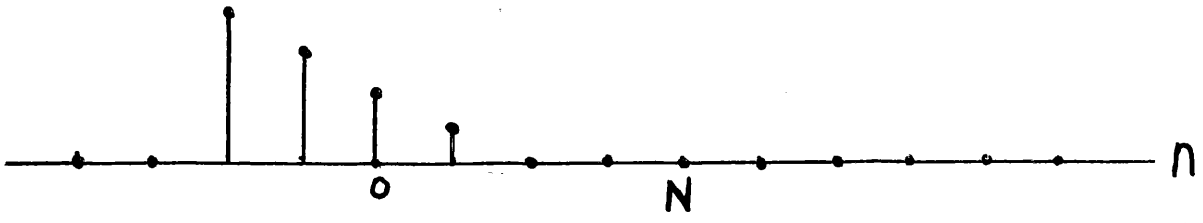
$\tilde{x}[n+2]$

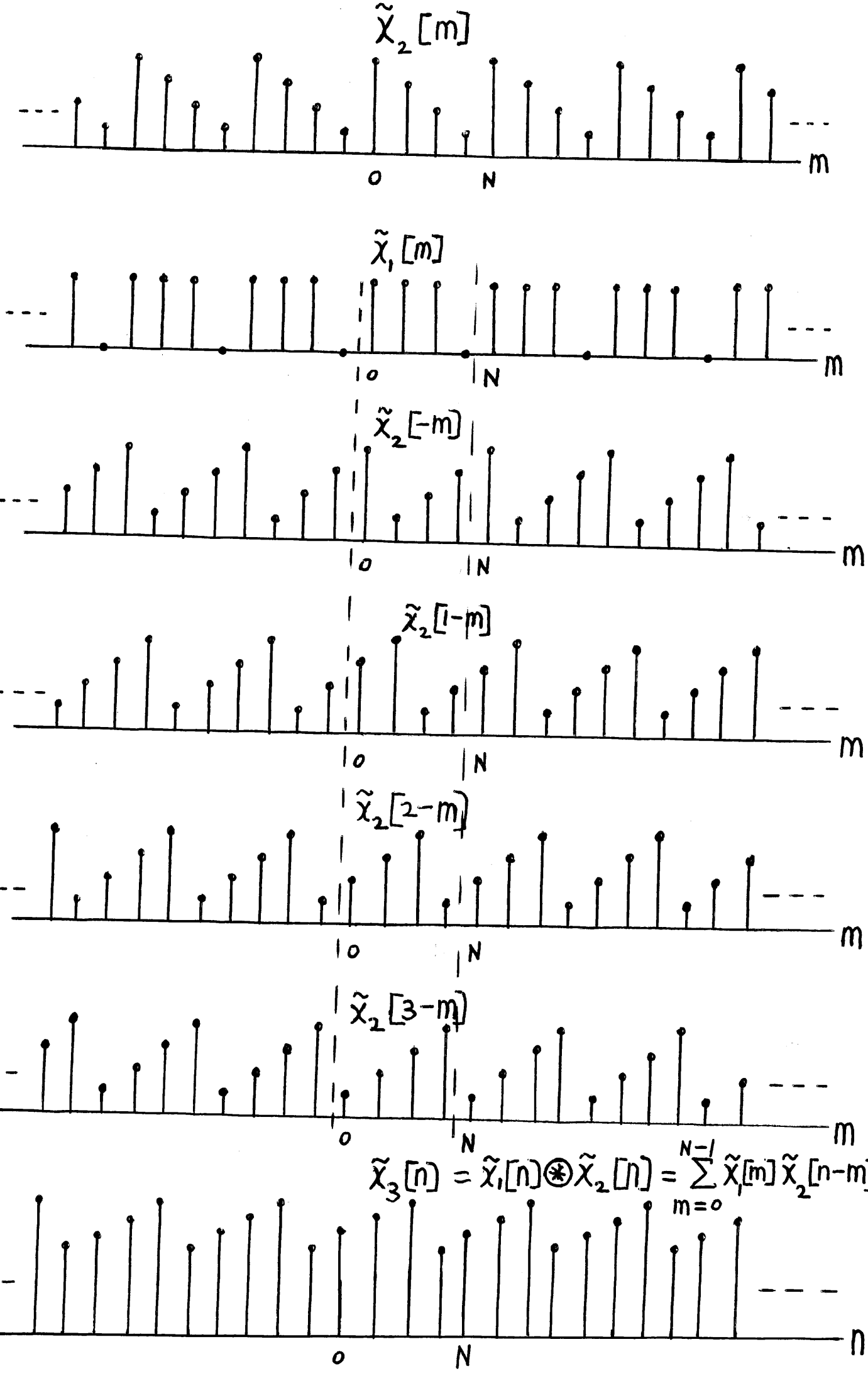


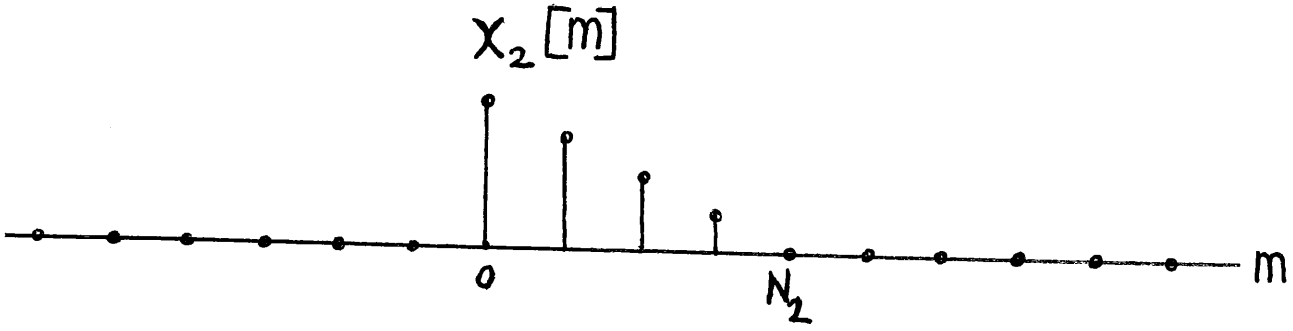
$\tilde{x}[n+2]\, R_N[n] = x[((n+2))_N]\, R_N[n]$

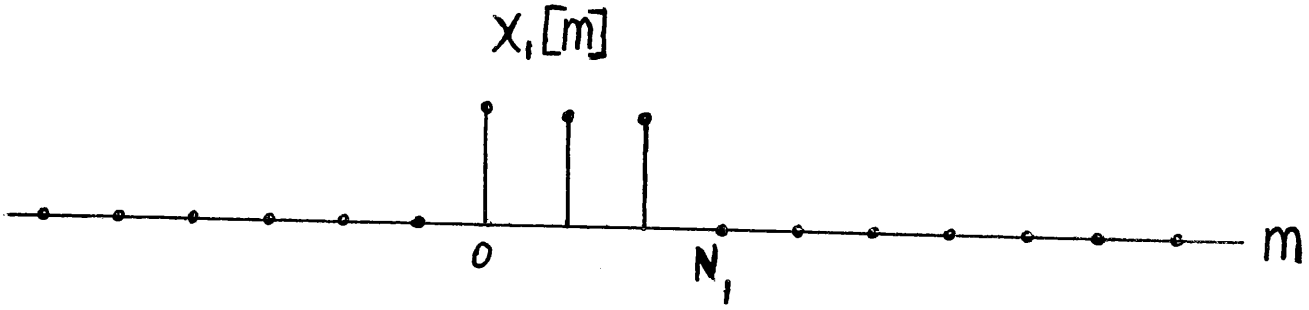


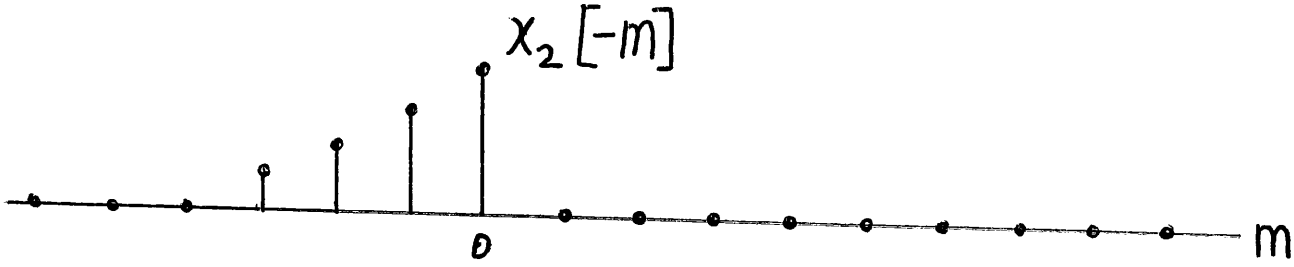
$x[n+2]$

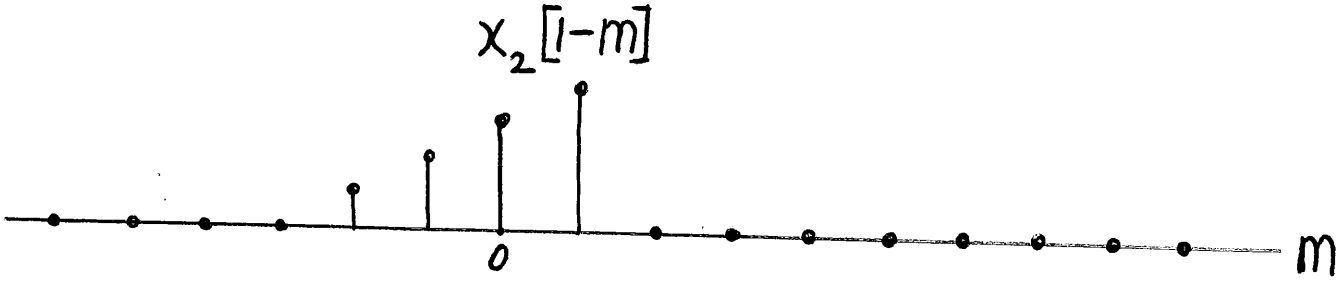


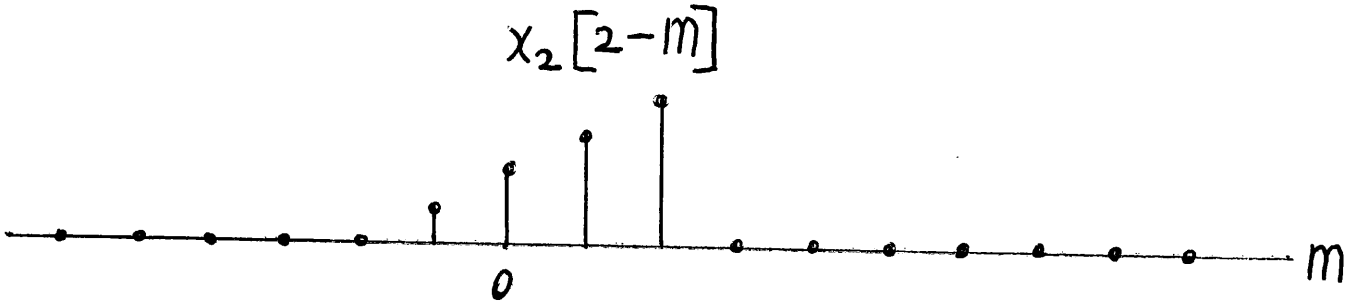

$\tilde{x}_2[m]$
m
0
N
$\tilde{x}_1[m]$
m
0
N
$\tilde{x}_2[-m]$
m
0
N
$\tilde{x}_2[1-m]$
m
0
N
$\tilde{x}_2[2-m]$
m
0
N
$\tilde{x}_2[3-m]$
m
0
N
$\tilde{x}_3[n] = \tilde{x}_1[n] \circledast \tilde{x}_2[n] = \sum_{m=0}^{N-1} \tilde{x}_1[m]\,\tilde{x}_2[n-m]$
n
0
N

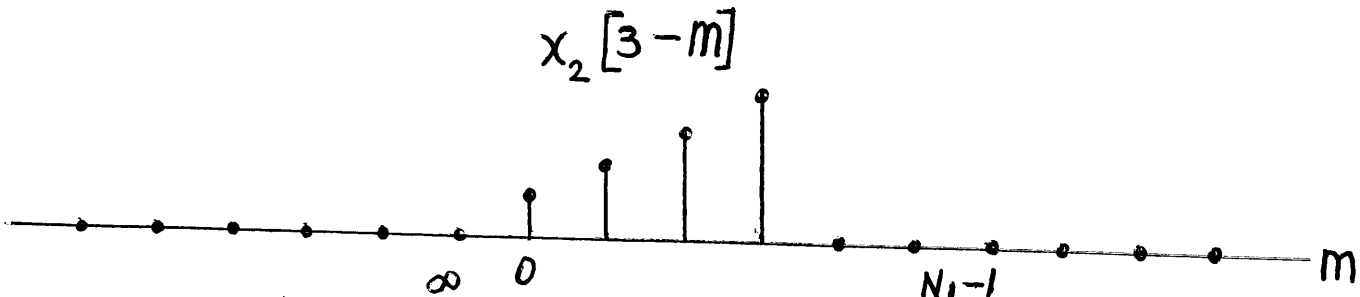




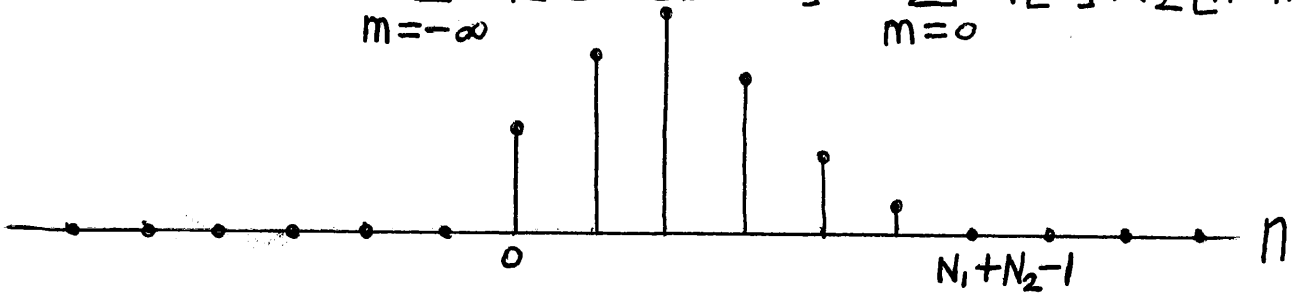






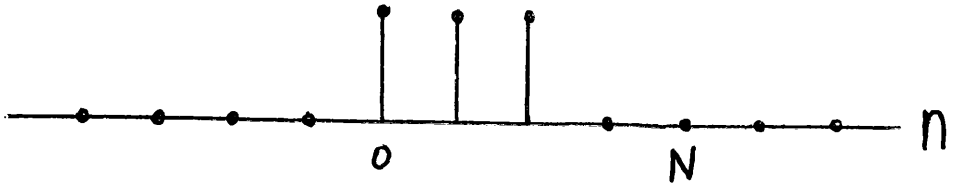


$$x_1[n] * x_2[n] = \sum_{m=-\infty}^{\infty} x_1[m]\, x_2[n-m] = \sum_{m=0}^{N_1-1} x_1[m]\, x_2[n-m]$$

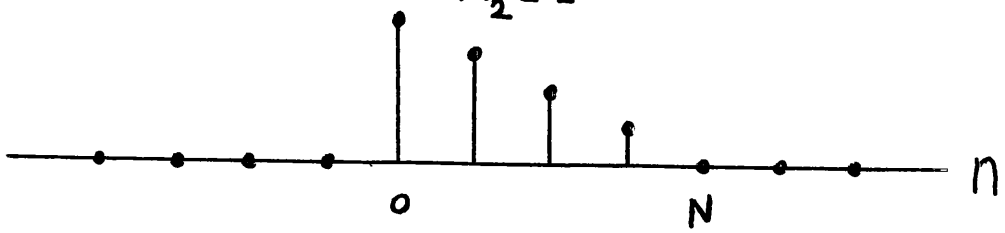


$N = 4$

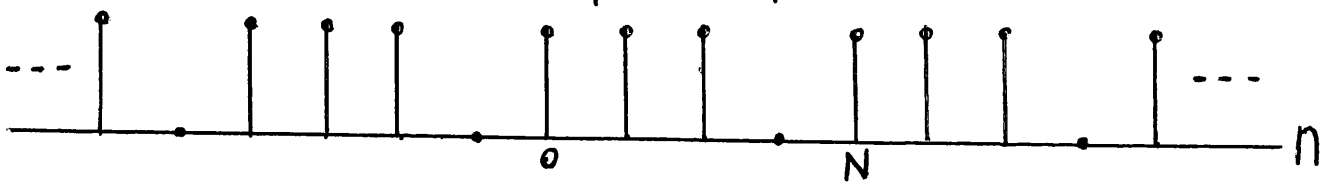
$x_1[n]$



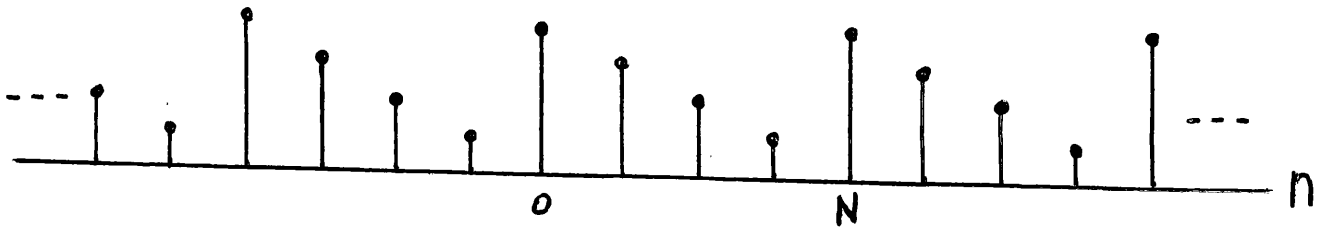
$x_2[n]$



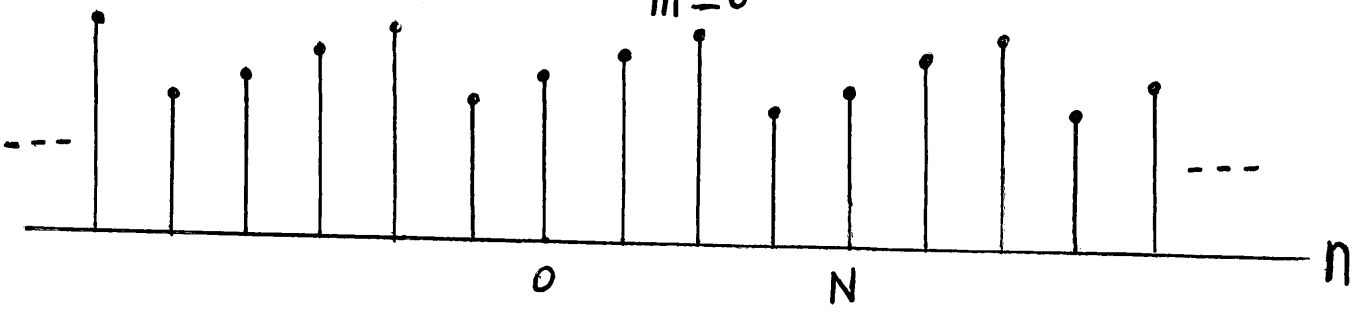
$\tilde{x}_1[n] = x_1[((n))_N]$



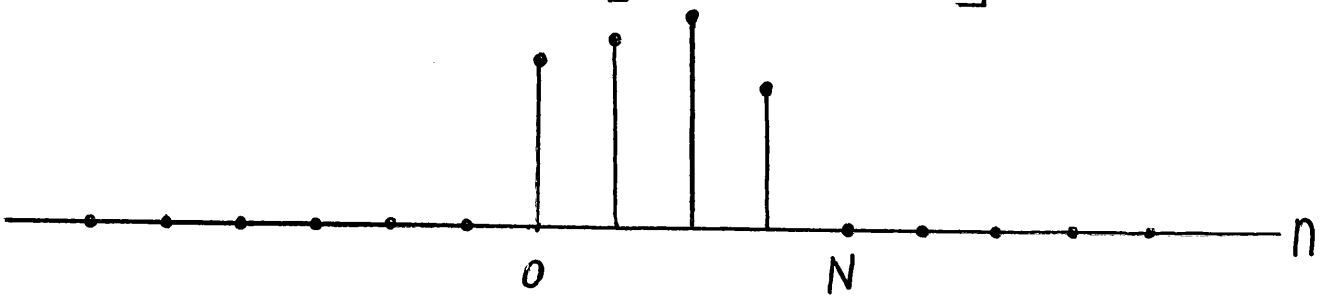
$\tilde{x}_2[n] = x_2[((n))_N]$



$$\tilde{x}_1[n] \circledast \tilde{x}_2[n] = \sum_{m=0}^{N-1} \tilde{x}_1[m]\, \tilde{x}_2[n-m]$$

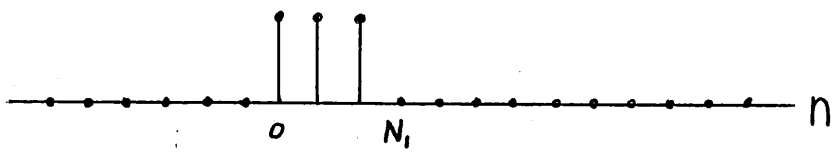


$$x_1[n] \circledast x_2[n] = \left[\tilde{x}_1[n] \circledast \tilde{x}_2[n]\right] R_N[n]$$

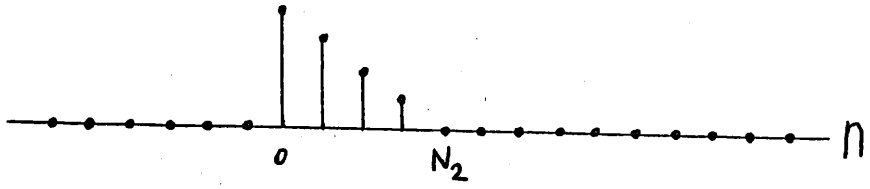


$N_1 = 3$, $N_2 = 4$, $\underline{\underline{N = N_1 + N_2 - 1 = 6}}$

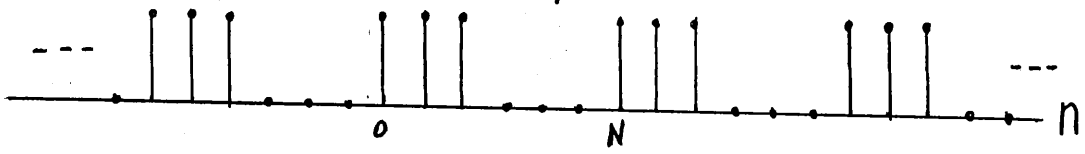
$x_1[n]$



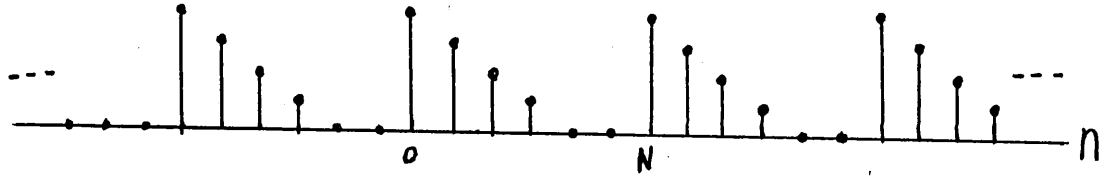
$x_2[n]$



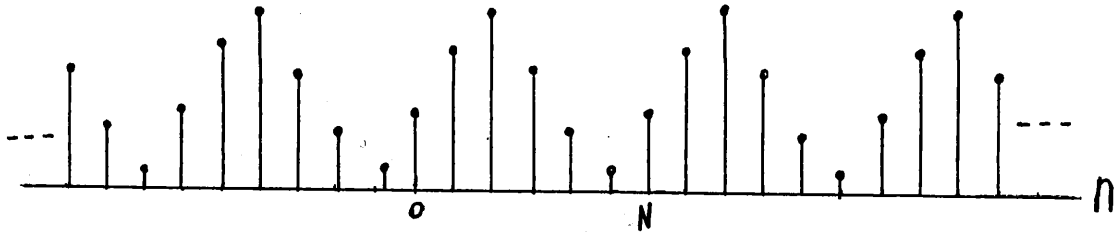
$$\tilde{x}_1[n] = x_1[((n))_N]$$



$$\tilde{x}_2[n] = x_2[((n))_N]$$



$$\tilde{x}_1[n] \circledast \tilde{x}_2[n] = \sum_{m=0}^{N-1} \tilde{x}_1[m]\, \tilde{x}_2[n-m]$$



$$x_1[n] \circledast x_2[n] = \left[\tilde{x}_1[n] \circledast \tilde{x}_2[n]\right] R_N[n]$$