QUESTION 1

Discrete Time Convolution

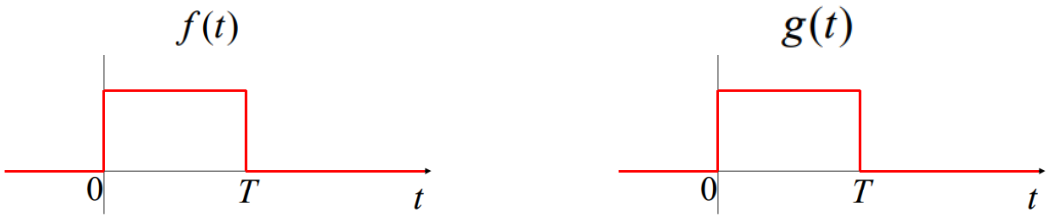
$$x[n]=[1\ \ 0\ \ 2\ \ 3\ \ 4\ \ -1\ \ 0\ \ 2]$$

$$h[n]=[1\ \ 0\ \ 0\ \ -1\ \ -2\ \ 1]$$

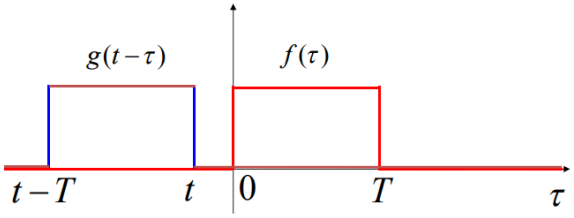
1x	[1	0	2	3	4	-1	0	2]					
0x	[0	1	0	2	3	4	-1	0	2]				
0x	[0	0	1	0	2	3	4	-1	0	2]			
(-1)x	[0	0	0	1	0	2	3	4	-1	0	2]		
(-2)x	[0	0	0	0	1	0	2	3	4	-1	0	2]	
1x	[0	0	0	0	0	1	0	2	3	4	-1	0	2]
	[1	0	2	3	4	-1	0	2	0	0	0	0	0]
	[0	0	0	0	0	0	0	0	0	0	0	0	0]
	[0	0	0	0	0	0	0	0	0	0	0	0	0]
	[0	0	0	-1	0	-2	-3	-4	1	0	-2	0	0]
	[0	0	0	0	-2	0	-4	-6	-8	2	0	-4	0]
	[0	0	0	0	0	1	0	2	3	4	-1	0	2]
+													
	[1	0	2	2	2	-2	-7	-6	-4	6	-3	-4	2]

QUESTION 2

Continuous Time Convolution

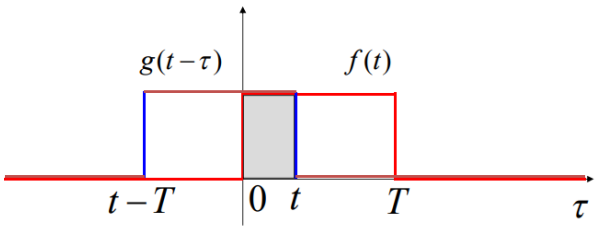


- Case 1: t < 0



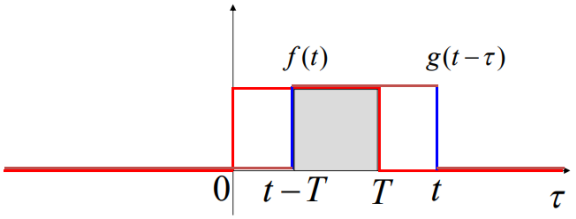
$$y(t) = \int_{-\infty}^{\infty} f(\tau)g(t-\tau)d\tau = 0$$

- Case 2: 0 <= t< T



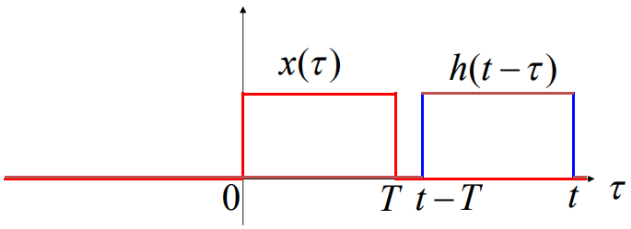
$$\int_{0}^{t} 1.1d\tau = t$$

- Case 3: $T \le t \le 2T$



$$\int_{t-T}^{T} 1.1d\tau = 2T - t$$

- Case 4: $t > 2T$



$$y(t)=\begin{cases}0, & t<0\\ t, & 0\le t<T\\ 2T-t, & T\le t\le 2T\\ 0, & t>2T\end{cases}$$