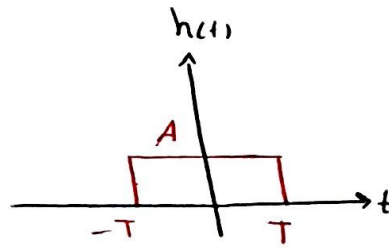
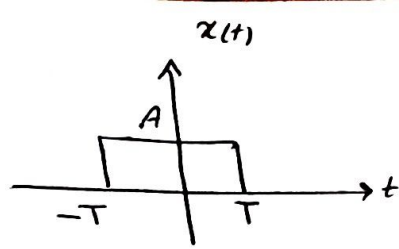
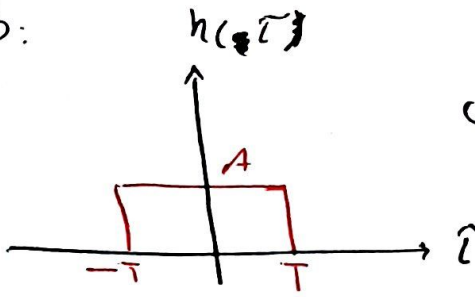


3

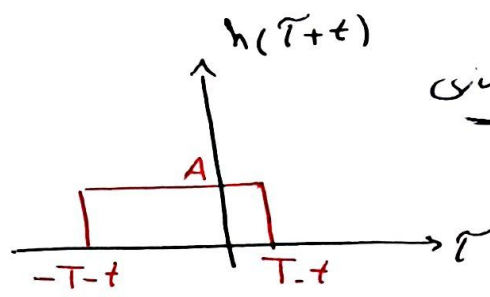


$$y(t) = x(t) * h(t) = \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau$$

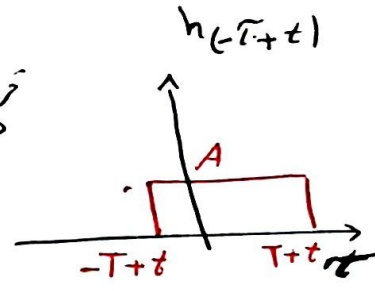
پس:



انتقال \Rightarrow

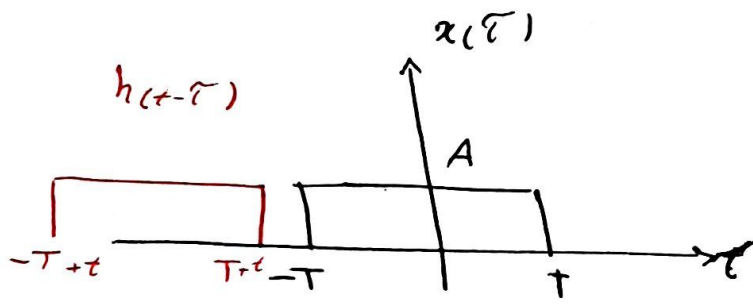


تزیین \Rightarrow



حالت 1:

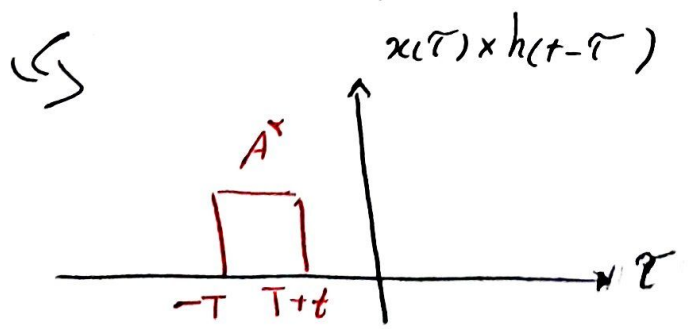
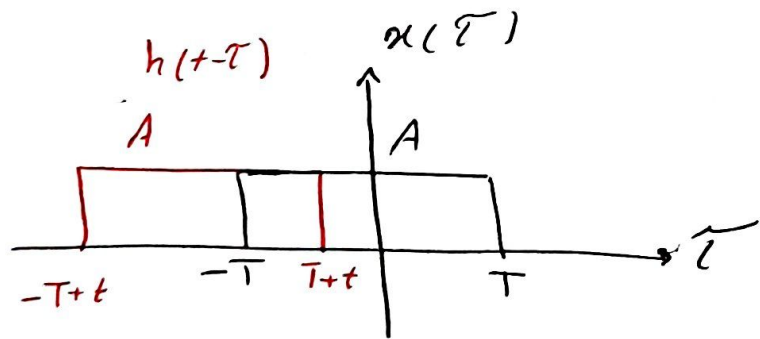
$t < -2T$ (محل خالی)



$\Rightarrow x(\tau) \cdot h(t-\tau) = 0$
 $\Rightarrow y(t) = x(t) * h(t) = \int_{-\infty}^{+\infty} 0 dt = 0$

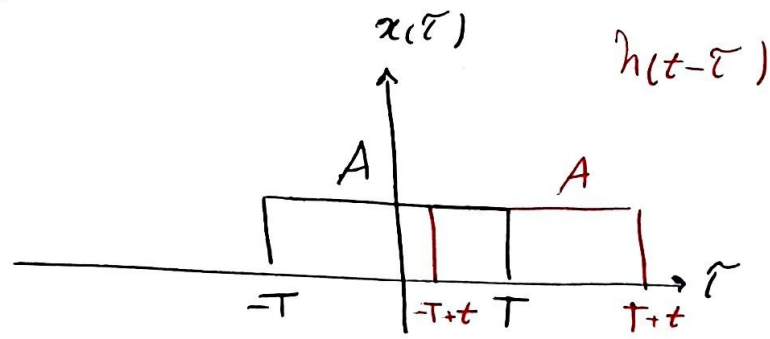
حالت 2:

$-2T < t < 0$



$$y(t) = \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau = \int_{-T}^{T+t} A^* d\tau = A^* (T+t)$$

3)



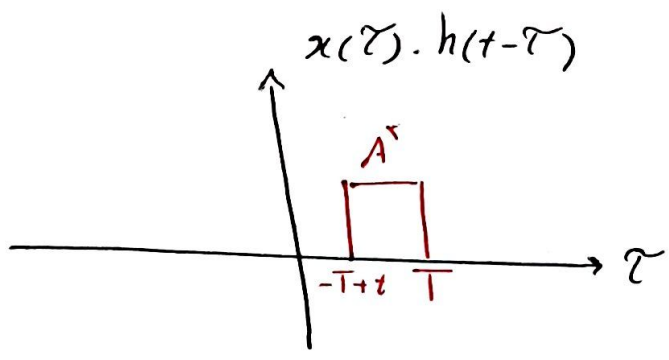
حالت ۲

$0 < t < 2T$

$$Z(t) = \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau$$

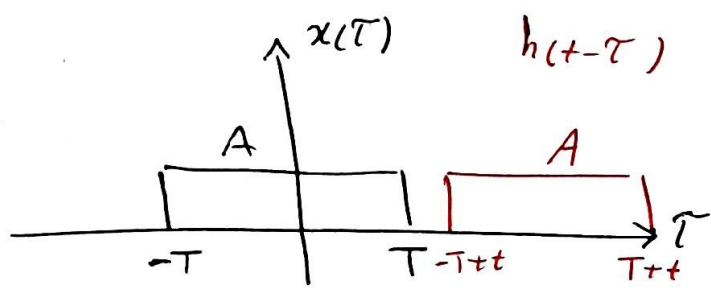
$$= \int_{-T+t}^T A d\tau = A^2 (2T-t)$$

۱)



حالت ۳

$t > 2T$



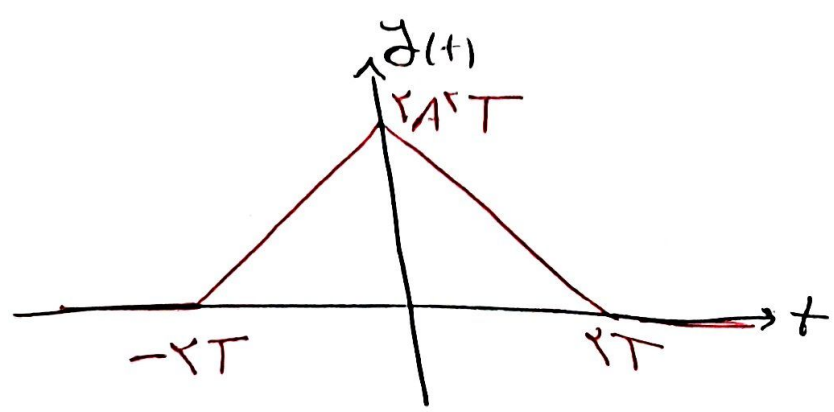
$x(\tau) \cdot h(t-\tau) = 0$

$Z(t) = 0$

بهترین راه

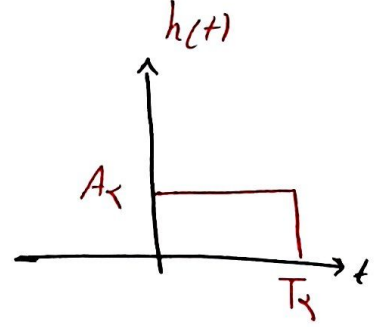
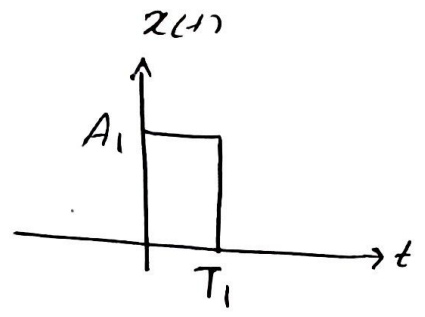
$$Z(t) = \begin{cases} 0 & t < -2T \\ A^2(2T+t) & -2T < t < 0 \\ A^2(2T-t) & 0 < t < 2T \\ 0 & t > 2T \end{cases}$$

=>



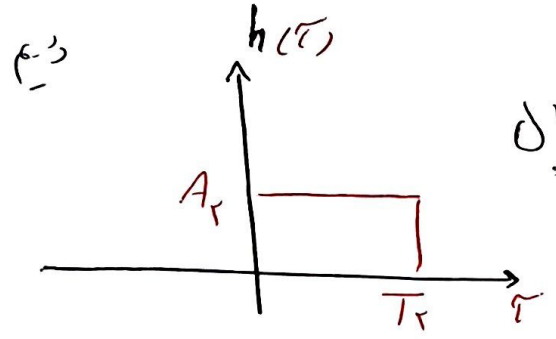
①

$\int_{-\infty}^{\infty}$

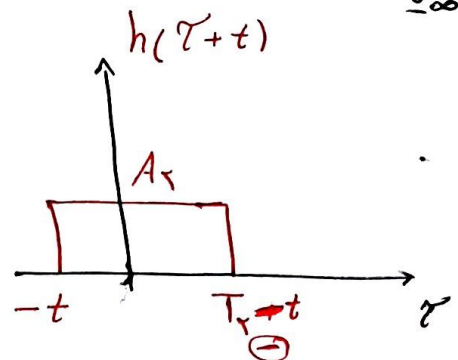


$\Rightarrow ?$

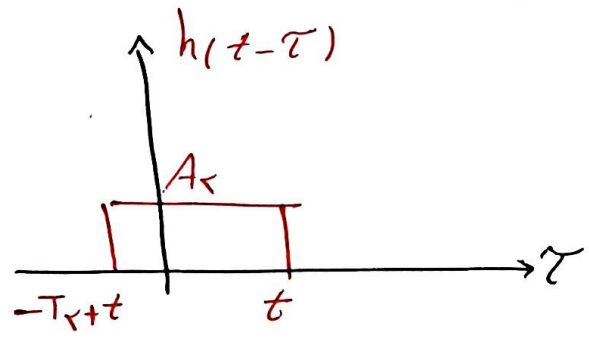
$$f(t) = x(t) * h(t) = \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau$$



انتقال \Rightarrow



قرینگی \Rightarrow



حالت 1

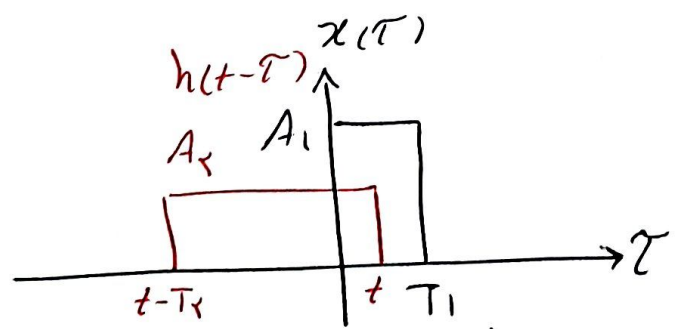
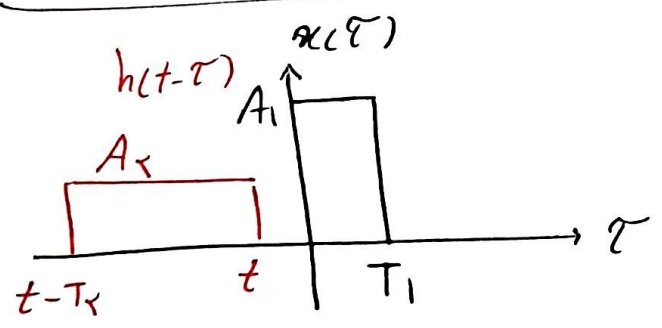
$t < 0$

$x(\tau) \cdot h(t-\tau) = 0$

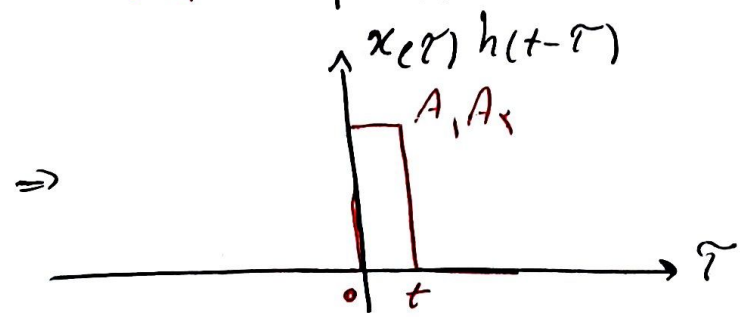
$\rightarrow f(t) = 0$

حالت 2

$0 < t \leq T_1$



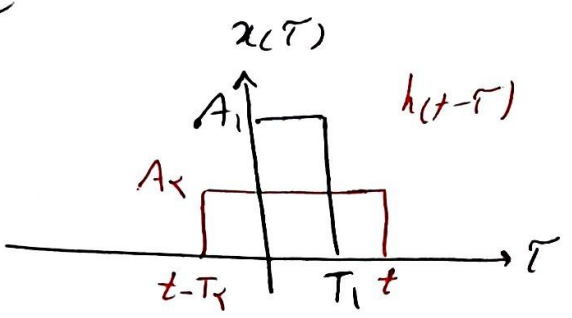
$$f(t) = \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau = \int_0^t A_1 A_2 d\tau = A_1 A_2 t$$



2

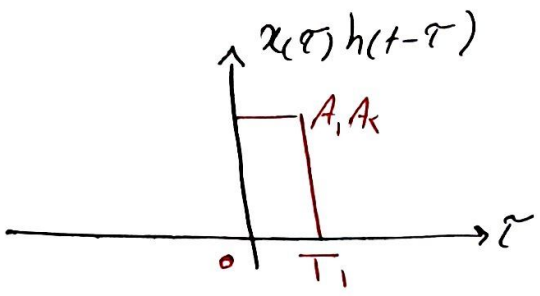
حالت ۲

$$T_1 < t \leq T_2$$



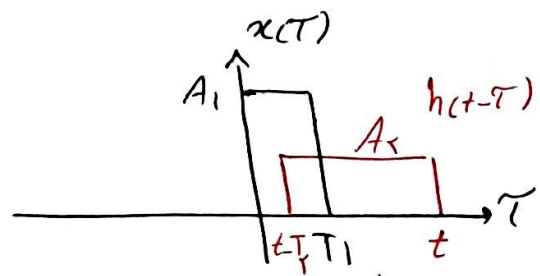
$$\begin{aligned} \Rightarrow \mathcal{F}(t) &= \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau \\ &= \int_0^{T_1} A_1 A_2 d\tau \\ &= A_1 A_2 T_1 \end{aligned}$$

↳



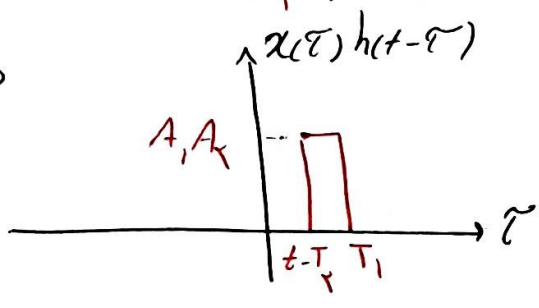
حالت ۳

$$T_2 < t \leq T_1 + T_2$$



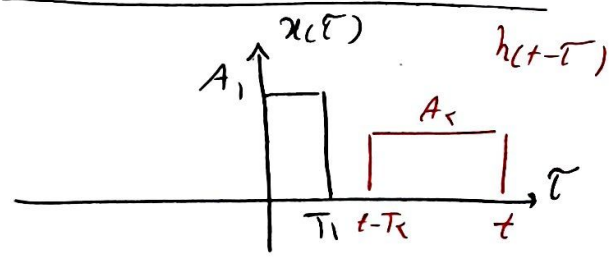
$$\begin{aligned} \mathcal{F}(t) &= \int_{-\infty}^{+\infty} x(\tau) h(t-\tau) d\tau \\ &= \int_{t-T_2}^{T_1} A_1 A_2 d\tau \\ &= A_1 A_2 (T_1 + T_2 - t) \end{aligned}$$

↳



حالت ۴

$$t > T_1 + T_2$$



$$\begin{aligned} x(\tau) \cdot h(t-\tau) &= 0 \\ \Rightarrow \mathcal{F}(t) &= 0 \end{aligned}$$

$$\mathcal{F}(t) = \begin{cases} 0 & t < 0 \\ A_1 A_2 t & 0 < t \leq T_1 \\ A_1 A_2 T_1 & T_1 < t \leq T_2 \\ A_1 A_2 (T_1 + T_2 - t) & T_2 < t \leq T_1 + T_2 \\ 0 & t > T_1 + T_2 \end{cases}$$

⇒

