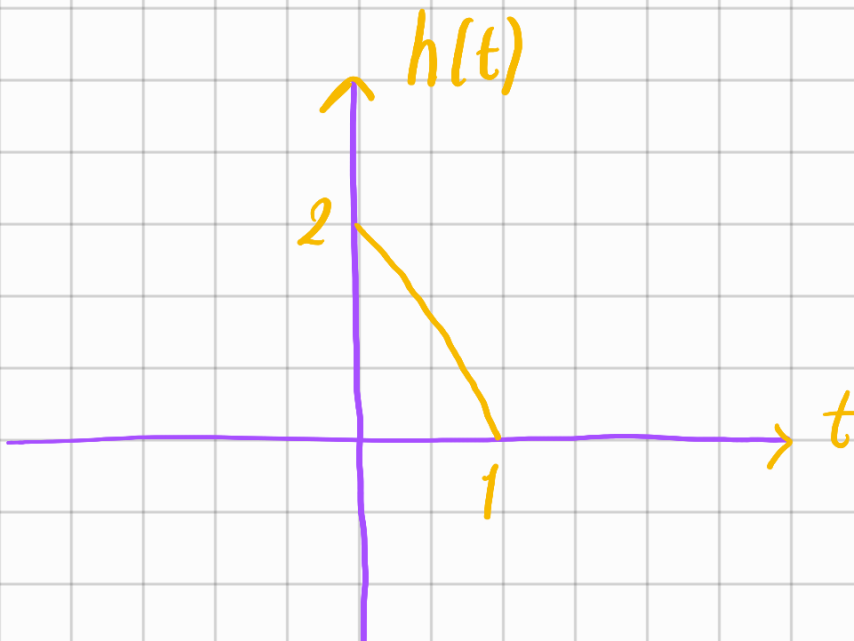
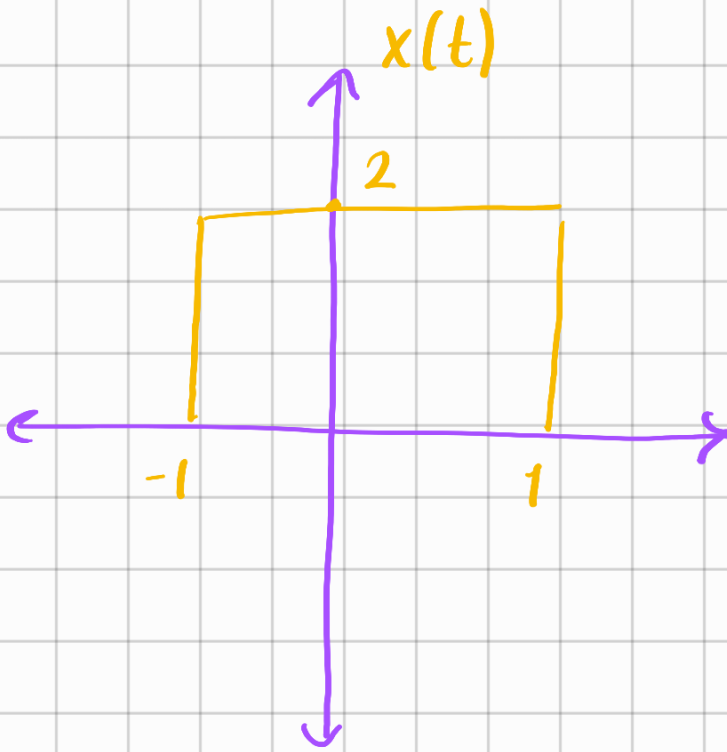


ÖR

giriş $x(t)$ ve sistem impuls fonksiyonu $h(t)$ aşağıdaki gibi tanımlıyorsa sistem çıkışı $y(t)$ 'yi hesaplayın



→ Bu soruda 5 tane bölge olur 2 tane kısmen çakışma
2 tane hiç çakışmama 1 tane tam çakışma

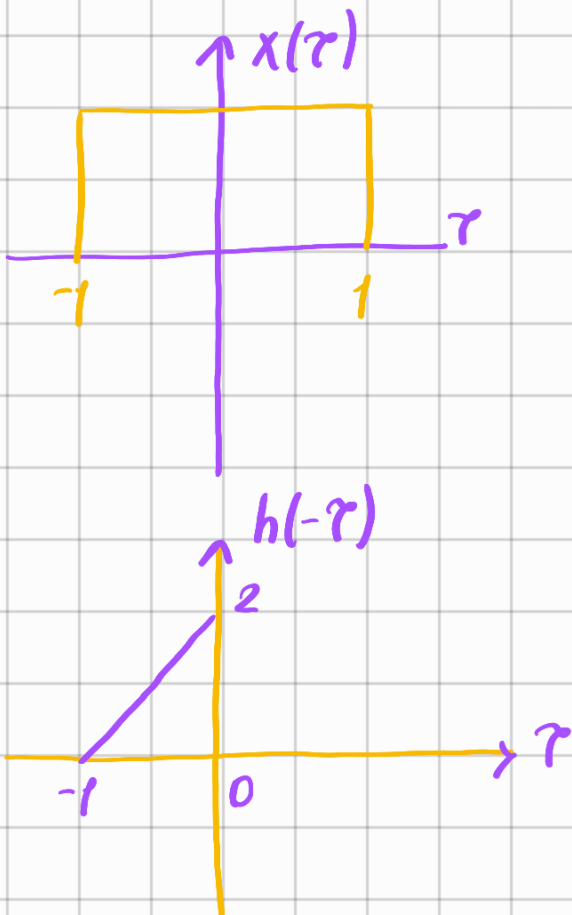
$$x(t) = \begin{cases} 2, & -1 < t < 1 \end{cases}$$

$$h(t) = \begin{cases} -2t+2, & 0 \leq t \leq 1 \end{cases}$$

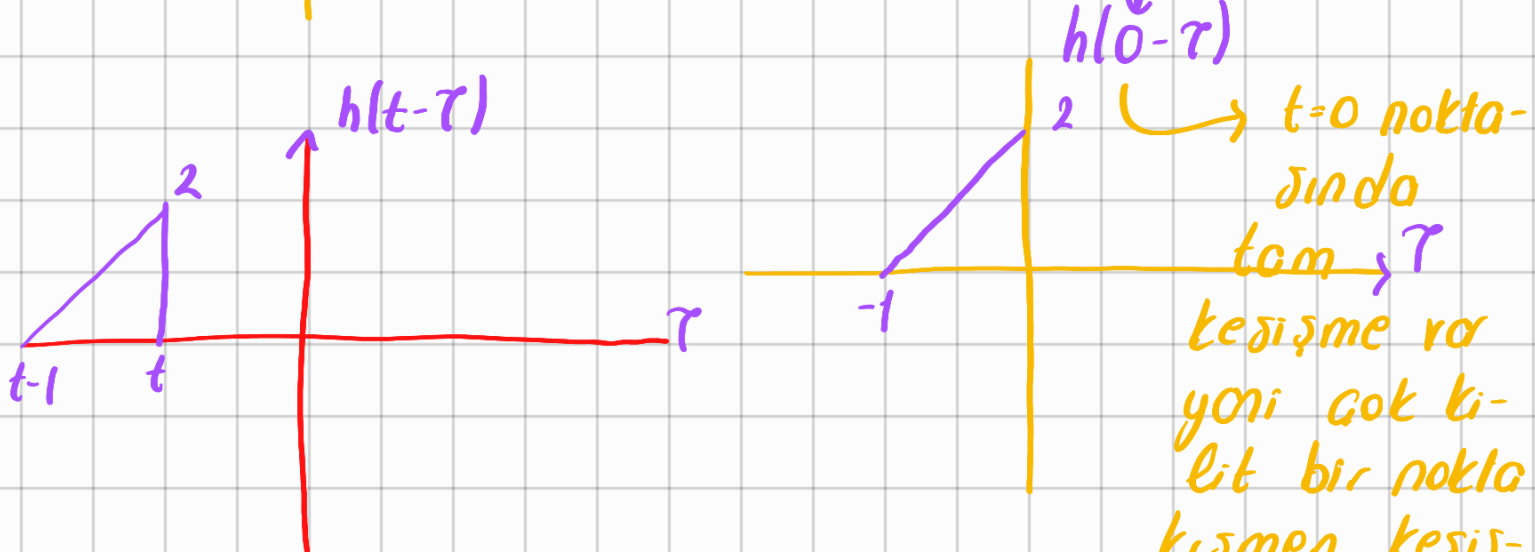
Kontrolüsyon yapmaya başlıyoruz

① $x(\tau), h(\tau)$

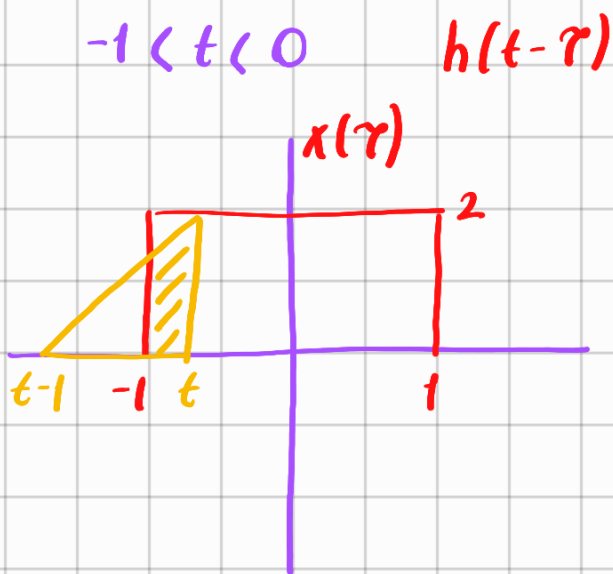
$$\int_{-\infty}^{\infty} x(\tau) h(t-\tau) d\tau$$



$t=0$



$$y(t) = \begin{cases} \text{Hiç,} & t < -1 \\ \text{Kısmen,} & -1 \leq t < 0 \\ \text{Tam,} & 0 \leq t < 1 \\ \text{Kısmen,} & 1 \leq t < 2 \\ \text{Hiç,} & t \geq 2 \end{cases}$$



$$h(t) = -2t + 2$$

$$h(t-\tau) = -2t + 2\tau + 2$$

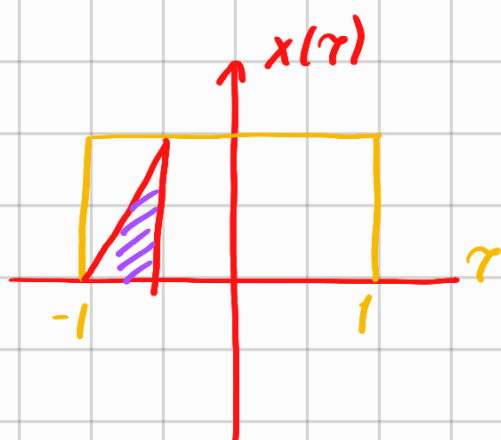
$$2(1-t-\tau)$$

$$y(t) = \int_{-1}^t x(\tau) \cdot h(t-\tau) d\tau$$

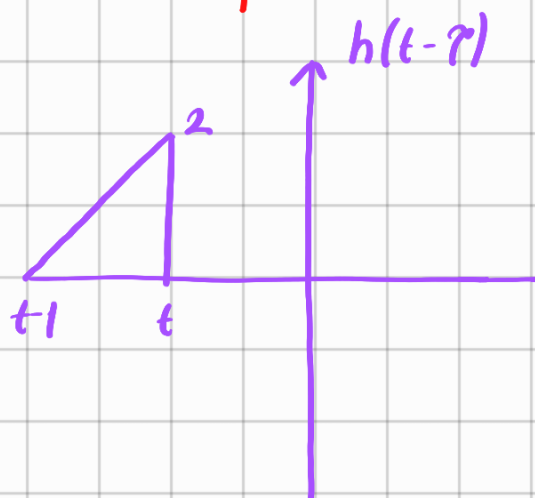
$$= \int_{-1}^t 2 \cdot 2(1-t-\tau) d\tau$$

$$4 \int_{-1}^t (1-t-\tau) d\tau = \boxed{2(1-t)^2}$$

$$\underline{-1 < t < 0}$$



$$\underline{0 < t < 1}$$



Giliş
y(t)

$$t < -1$$

$$0$$

$$-1 < t < 0$$

$$2(1-t^2)$$

$$0 < t < 1$$

$$2$$

$$1 < t < 2$$

$$2(t-2)^2$$

$$2 < t$$

$$0$$

