SORU 1

$$y[n] = x[n+1] - x[n-1]$$

a) $y_2[n] = x_2[n+1] - x_2[n-1]$

t_0 kadar öteleyelim $\rightarrow$ $\boxed{x[n-n_0+1] - x[n-n_0-1]}$ *

$y[n] \underset{n \to n-n_0}{\Rightarrow} y[n-n_0] = \boxed{x[n-n_0+1] - x[n-n_0-1]}$ *

Birbirlerine eşit olduğu için **zamanla değişmez**

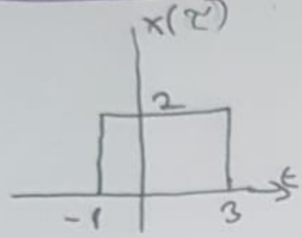
b) $y[n] = x[n+1] - x[n-1]$

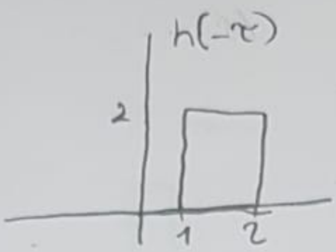
n anındaki çıkış, çıkış değerlerine de bağlı olduğu için **nedensel değildir**

$T_{1,0} = 1$
$T_{2,0} = 2.$

yok

Soru 3

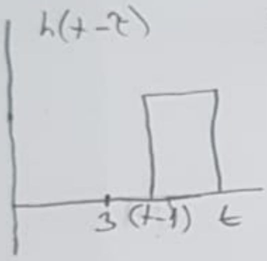




$T_{L,0}=1$

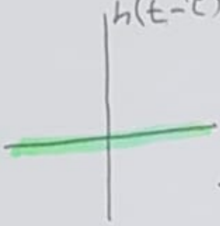
$T_{R,0}=2.$

1. Bölge



$T_{Lt}>3,\ t-1>3,\ t>4$ örtüşme yok

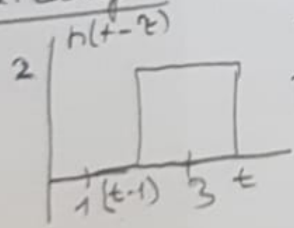
$h(t-\tau)x(\tau)=0$



$\int_{-\infty}^{\infty} 0\, d\tau = 0$

$\boxed{y(t)=0 \quad \forall t>4}$

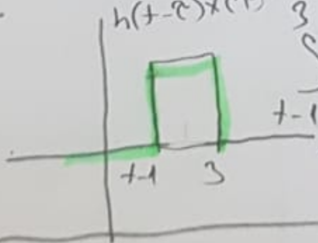
2. Bölge



$T_{R,L}>3,\ t>3$ $\boxed{3<t\leq 4}$

$T_{Lt}\leq 3,\ t-1\leq 3,\ t\leq 4.$

$h(t-\tau)x(\tau)$



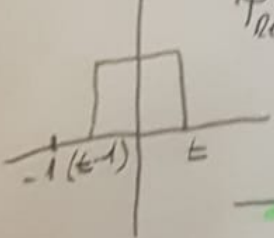
$\int_{t-1}^{3} 4\, d\tau = [4\tau]_{t-1}^{3} = 12-4t+4$

$\boxed{y(t)=16-4t}$

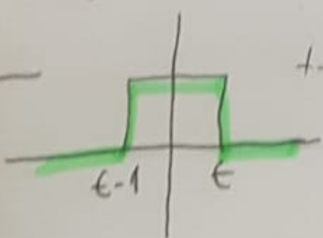
3. Bölge

$T_{Lt}\geq -1,\ t-1\geq -1,\ t\geq 0$ $\boxed{0\leq t\leq 3}$

$T_{Rt}\leq 3,\ t\leq 3$

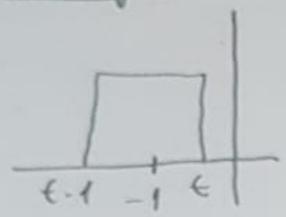


$\int_{t-1}^{t} 4 d\tau = [4\tau]_{t-1}^{t} = 4t-4t+4.$



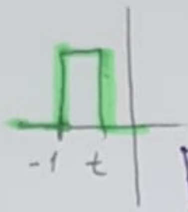
$\boxed{y(t)=4}$

4. Bölge



$T_{1,t} < -1,\ t-1 < -1,\ t < 0$ $-1 < t \leq 0$

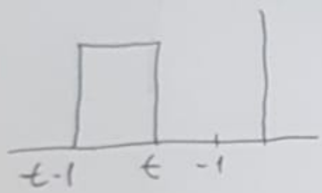
$T_{2,t} > -1,\ t > -1$



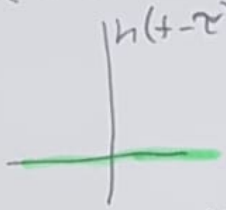
$$\int_{-1}^{t} 4\, d\tau = \left[4\tau\right]_{-1}^{t} = 4t+4$$

$$\boxed{y(t) = 4t+4}$$

5. Bölge

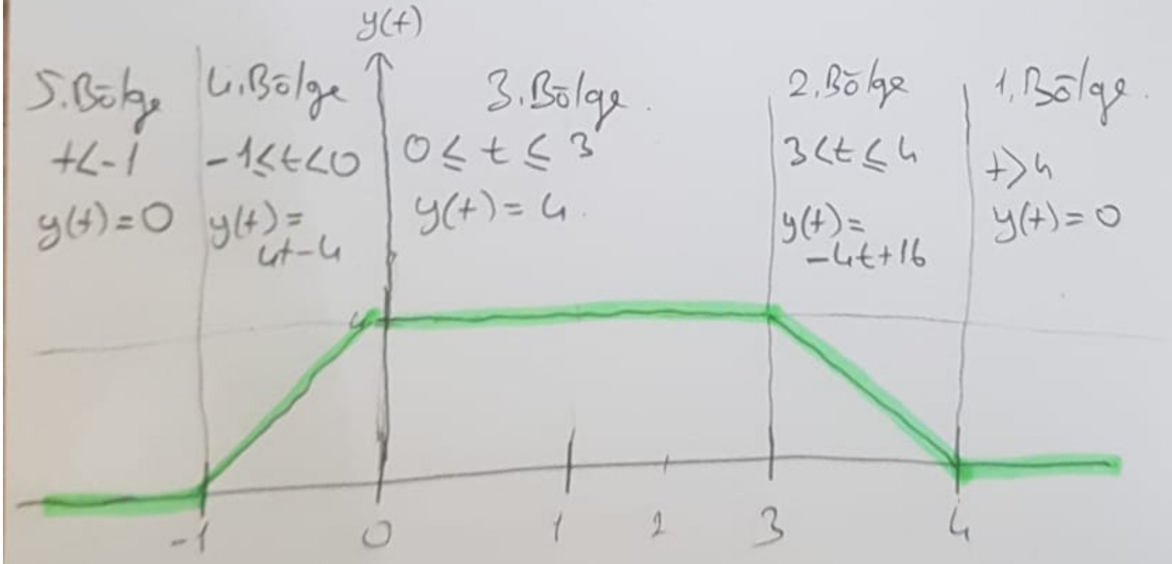


$T_{2,t} < -1,\ t < -1$ örtüşme yok

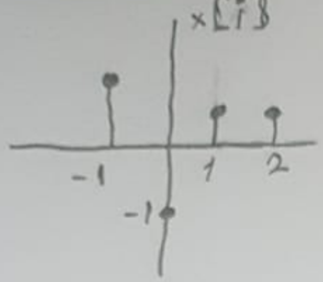


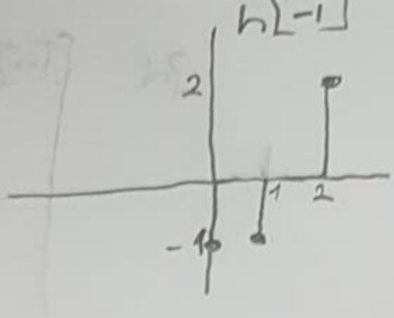
$$\int_{-\infty}^{\infty} 0\, d\tau = 0$$

$y(t) = 0$ $t < -1$.

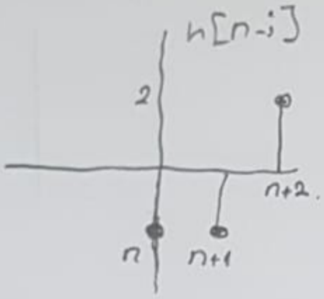


SORU - 2



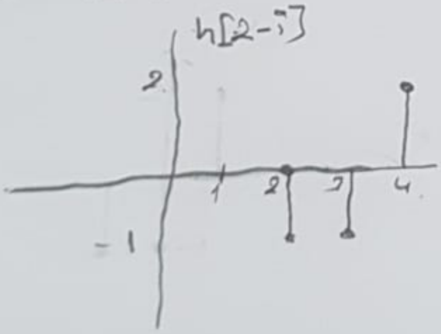


$$y[n] = \sum_{i=-\infty}^{\infty} x[i]\, h[n-i]$$



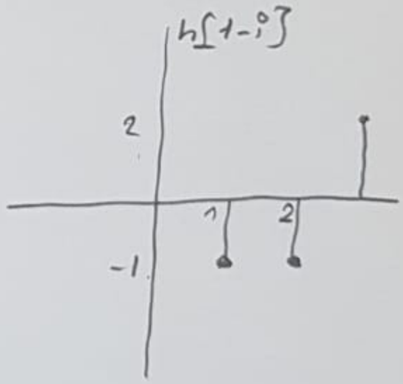
$n>2$ için $y[n]=0$

$n=2$ için



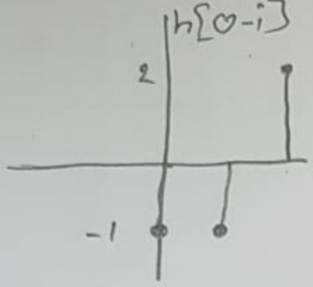
$y[2] = -1 \times 1$
$= -1$

$n=1$ için



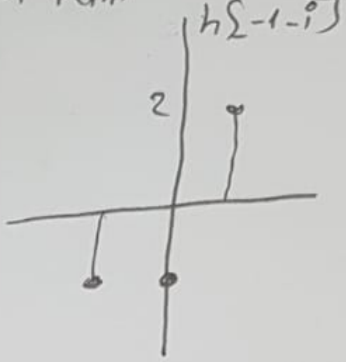
$y[1] = (-1\times 1)+(-1\times 1)$
$= -2$

$n = 0$ için



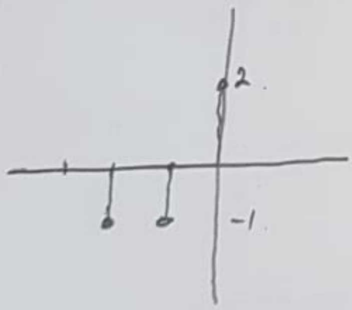
$y[0] = (-1)\times(-1) + (-1\times 1) + (2\times 1)$
$= 1 - 1 + 2$
$= 2$

$n = -1$ için



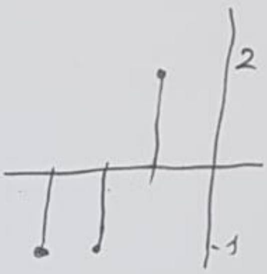
$y[-1] = (2\times(-1)) + (-1\times -1) + (2\times 1)$
$= -2 + 1 + 2$
$= 1$

$n = -2$ için



$y[-2] = (-1\times 2) + (2\times -1)$
$= -2 - 2 = -4$

$n = -3$ için



$y[-3] = (2\times 2) = 4$

$n < 3$ için

$y[n] = 0$