

On my honor I have never given nor received any unauthorized aid for inappropriate assistance for all sessions of this exam the work done on this exam is totally my own. I understand by the school code, violation of these principles will lead to a zero grade and is subject to harsh discipline issues.

Yuno Emre Erdinc

150117064

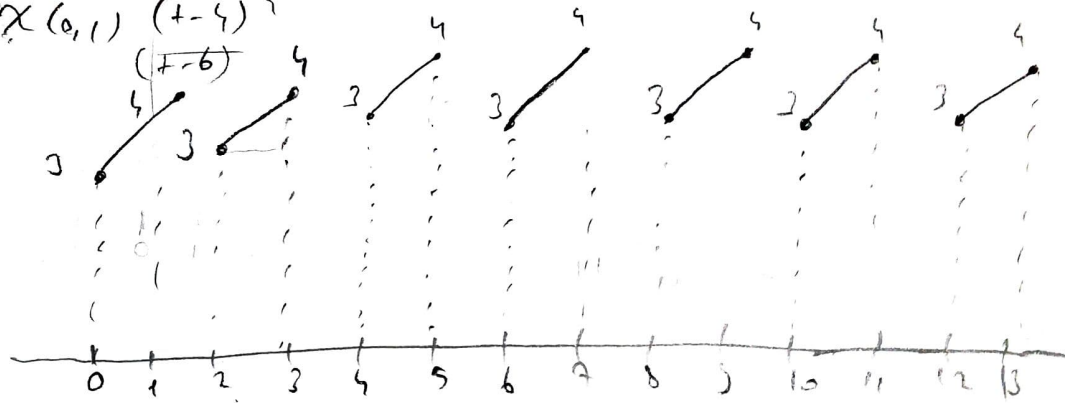
19.04.2021

Q1) $t \in (0, 13)$ $f(t) = \sum_{k=-\infty}^{\infty} (t-2k+3) \chi_{(0,1)}(t-2k)$

a)

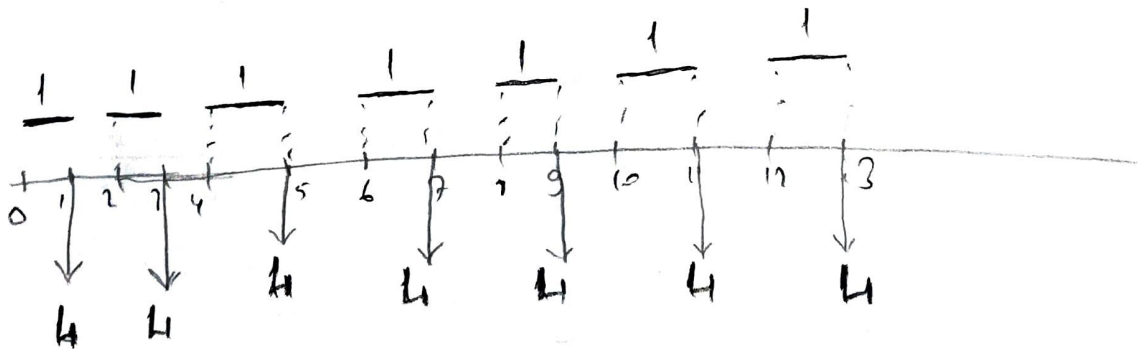
$$\begin{aligned} k=-2 & (t+7) \chi_{(0,1)}(t+4) \\ k=-1 & (t+5) \chi_{(0,1)}(t+2) \\ k=0 & (t+3) \chi_{(0,1)}(t) \\ k=1 & (t+1) \chi_{(0,1)}(t-2) \\ k=2 & (t-1) \chi_{(0,1)}(t-4) \\ & \vdots \end{aligned}$$

$$\chi_{(0,1)}(t) = \begin{cases} 1 & 0 < t < 1 \\ 0 & \text{elsewhere} \end{cases}$$



b)

$$\frac{d f(t)}{d t}$$



$$2) \lim_{a \rightarrow \infty} \int_{-5}^{10} \underbrace{\frac{t^2 + 20}{e^t(t-3)}}_{y(t)} \sin(a(t-3)) dt$$

Yours True
Erkennung

$\lim_{\omega \rightarrow \infty} f(t) \sin(\omega t) = 0$ because of R-L

$$\lim_{a \rightarrow \infty} \int_{-5}^{10} y(t) \sin(a(t-3)) dt$$

Answer is 0 R-L

Page 2