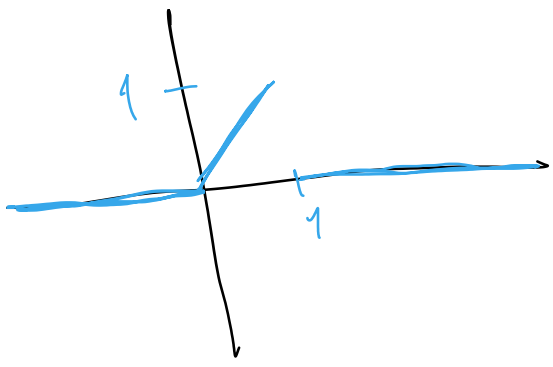
2.04*

torsdag 25 januari 2024 14:39

a)



$t < 0,\ v(t) = 0$

$0 < t < 1,\ v(t) = t$

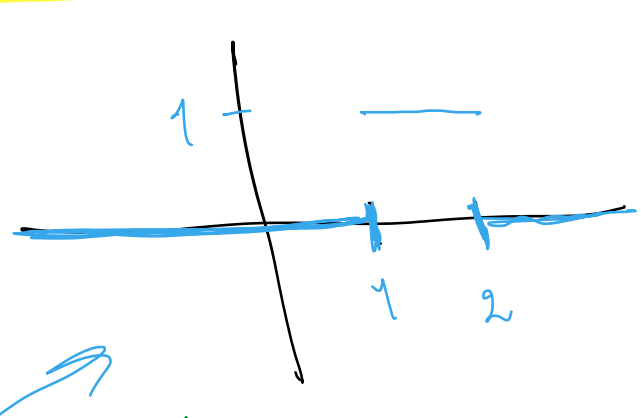
$t > 1\ \ v(t) = 0$

$t\,\theta(t) = \begin{cases} t, & t > 0 \\ 0, & t < 0 \end{cases}$

$t\,\theta(t-1) = \begin{cases} t, & t > 1 \\ 0, & t < 1 \end{cases}$

$t(\theta(t) - \theta(t-1))$

$t < 1,\ v(t) = 0$



$1 < t < 2,\ v(t) = 1$

$t > 2,\ v(t) = 0$

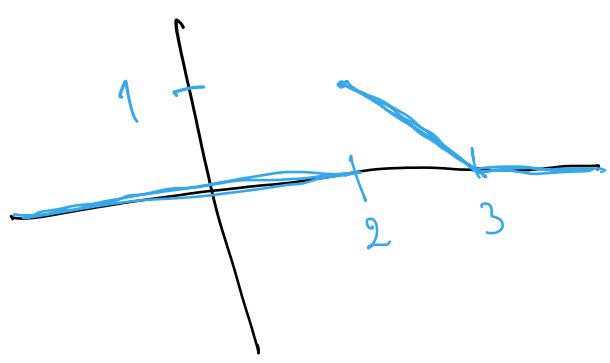
$t < 1$	$0 - 0$
$1 < t < 2$	$1 - 0$
$t > 2$	$1 - 1$

$\theta(t-1) = \begin{cases} 1, & t > 1 \\ 0, & t < 1 \end{cases}$

$\theta(t-2) = \begin{cases} 1, & t > 2 \\ 0, & t < 2 \end{cases}$

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

$t < 2,\ v(t) = 0$



$2 < t < 3,\ v(t) = -t + 3$

$t > 3,\ v(t) = 0$

$(-t+3)\,\theta(t-2) = \begin{cases} -t+3, & t > 2 \\ 0, & t < 2 \end{cases}$

$(t-3)\,\theta(t-3) = \begin{cases} t-3, & t > 3 \\ 0, & t < 3 \end{cases}$

$(-t+3)\,\theta(t-2) + (t-3)\,\theta(t-3)$

Så: $v(t) = t(\theta(t) - \theta(t-1)) + \theta(t-1) - \theta(t-2) + (-t+3)\,\theta(t-2) + (t-3)\,\theta(t-3)$

$(3-t)(\theta(t-2) - \theta(t-3))$