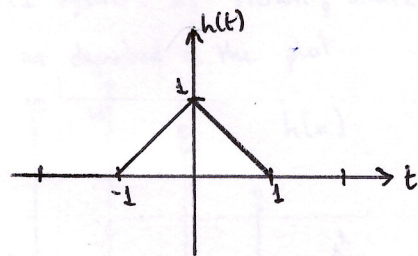
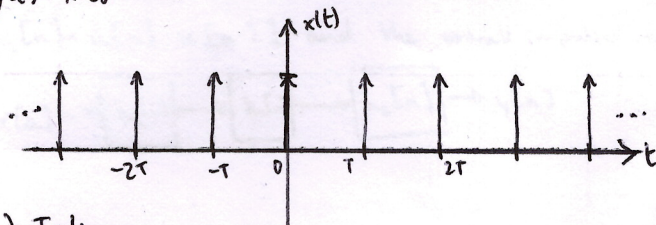


2.23. Let $x(t)$ and $h(t)$ be as depicted. $x(t) = \sum_{k=-\infty}^{\infty} \delta(t-kT)$. Determine and sketch $y(t) = x(t) * h(t)$ for the provided values of T .

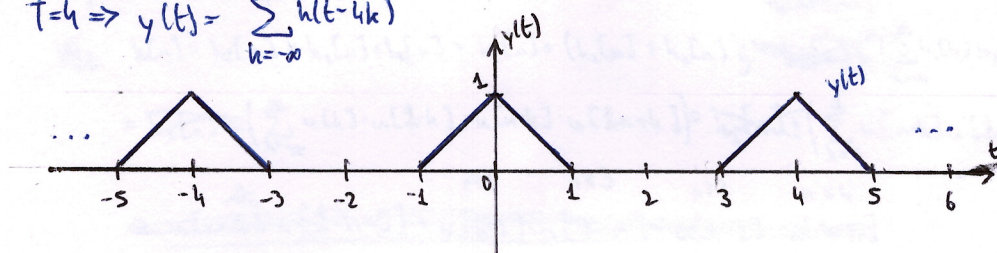


a) $T=4$

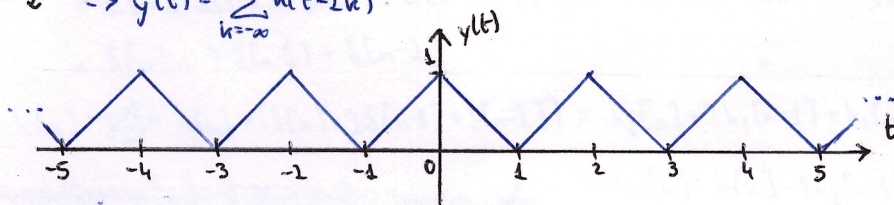
~~We may define h(t) as~~

$$y(t) = x(t) * h(t) = \left(\sum_{k=-\infty}^{\infty} \delta(t-kT) \right) * h(t) = \sum_{k=-\infty}^{\infty} (\delta(t-kT) * h(t)) = \sum_{k=-\infty}^{\infty} h(t-kT)$$

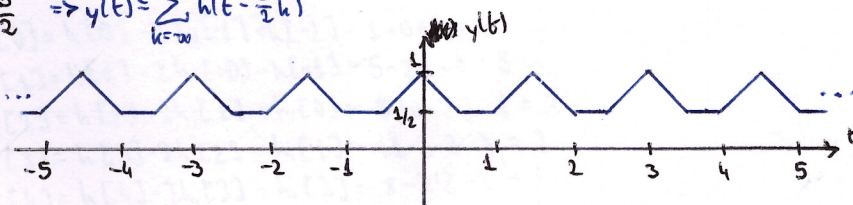
$$T=4 \Rightarrow y(t) = \sum_{k=-\infty}^{\infty} h(t-4k)$$



b) $T=2 \Rightarrow y(t) = \sum_{k=-\infty}^{\infty} h(t-2k)$



c) $T=\frac{3}{2} \Rightarrow y(t) = \sum_{k=-\infty}^{\infty} h(t-\frac{3}{2}k)$



d) $T=1 \Rightarrow y(t) = \sum_{k=-\infty}^{\infty} h(t-k) = 1$

