

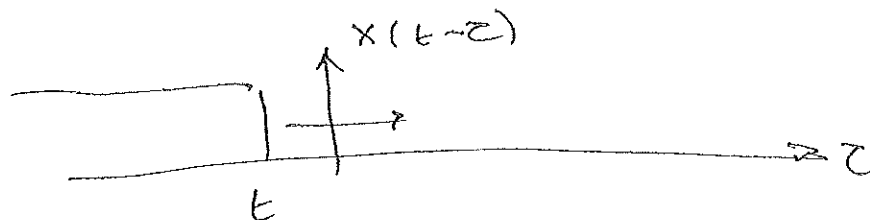
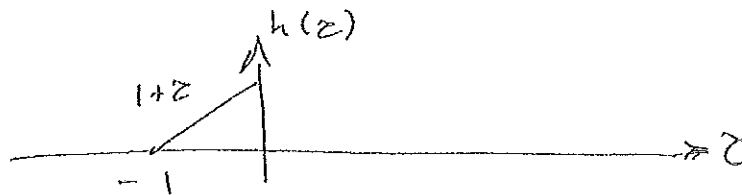
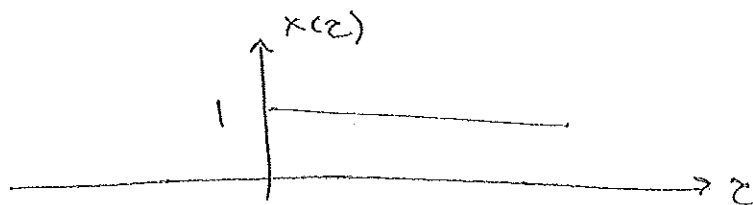
Question 3 (a)

□

$$x(t) = u(t)$$

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

$$y(t) = \int_{-\infty}^{\infty} x(\tau) h(t-\tau) d\tau \quad \text{or} \quad \int_{-\infty}^{\infty} h(\tau) x(t-\tau) d\tau$$



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$$t < -1 \quad y(t) = 0$$

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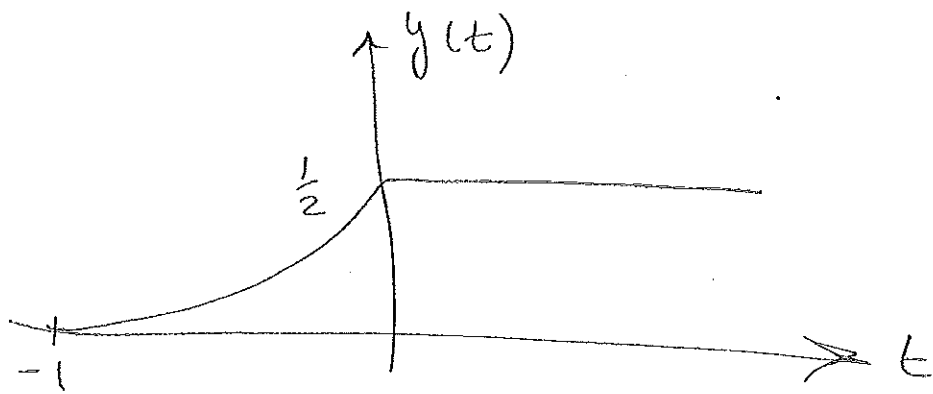
$$\begin{aligned} -1 \leq t \leq 0 \quad y(t) &= \int_{-1}^t (1+z) dz = z + \frac{z^2}{2} \Big|_{-1}^t \\ &= t + \frac{t^2}{2} + 1 - \frac{1}{2} \end{aligned}$$

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$$\begin{aligned} t > 0 \quad y(t) &= \int_{-1}^0 (1+z) dz = \frac{1}{2} \\ &= \frac{1}{2} + t + \frac{t^2}{2} \end{aligned}$$

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