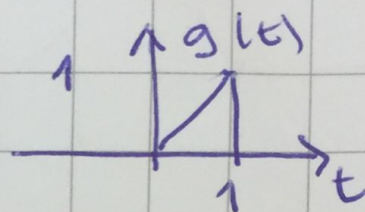
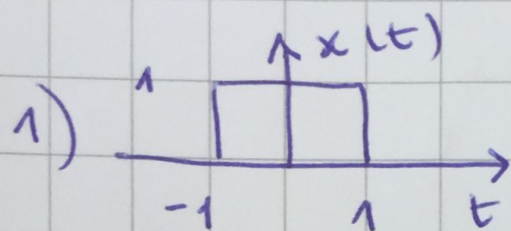


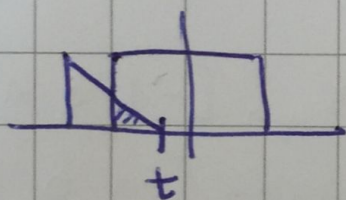
Solución Guía Convolución 1D



$$y(t) = x(t) * g(t) = \int_{-\infty}^{\infty} g(t-\tau) x(\tau) d\tau$$

I) para $t < -1$, y para $t > 2$
 $y(t) = 0$ (no hay intersección)

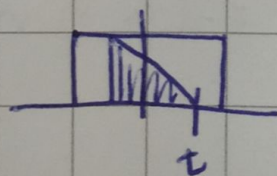
II) $-1 < t < 0$



$$y(t) = (1+t)^2/2$$

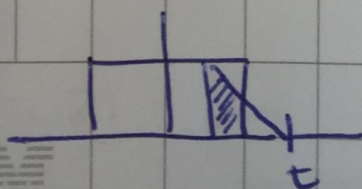
$$= \frac{1}{2} + t + \frac{t^2}{2}$$

III) $0 < t < 1$



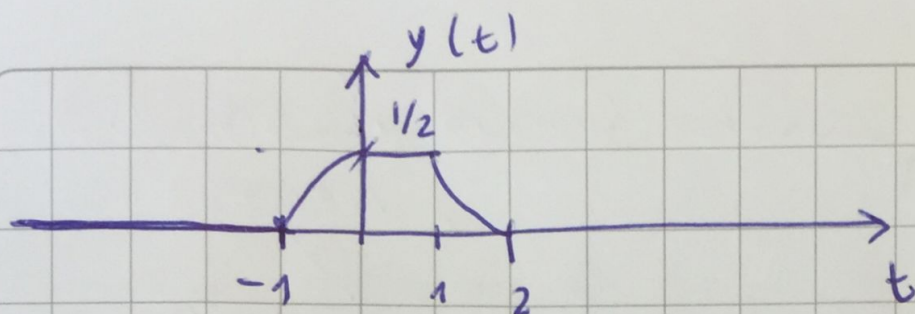
$$y(t) = 1/2$$

IV) $1 < t < 2$



$$y(t) = 1/2 - \frac{(t-1)^2}{2}$$

$$= t - \frac{t^2}{2}$$



$$2) \quad x = [1 \ 1 \ 1 \ 3 \ 3 \ 3 \ 0 \ 0 \ 0 \ 2 \ 2 \ 2]$$

$$g = [-1 \ 0 \ 1] \quad \text{ver conv2 en matlab}$$

$$\tilde{g} = [1 \ 0 \ -1]$$

$$y = [0 \ 0 \ 0 \ -1 \ -1 \ 0 \ -2 \ -2 \ 0 \ 3 \ 3 \ 0 \ -2 \ -2 \ 0 \ 2 \ 2 \ 0]$$

$$3) \quad a) \text{ bordes horizontales } g_h = [-1 \ 0 \ 1]^T$$

$$b) \text{ bordes verticales } g_v = [-1 \ 0 \ 1]$$

c)

$$I_h = I * g_h$$

$$I_v = I * g_v$$

$$G = (I_h^2 + I_v^2)^{1/2}$$

$$E = G > \theta$$

$$4) \quad g = \underbrace{[1 \ 1 \ \dots \ 1]}_{15} / 15$$

→ ver ejemplo en Matlab