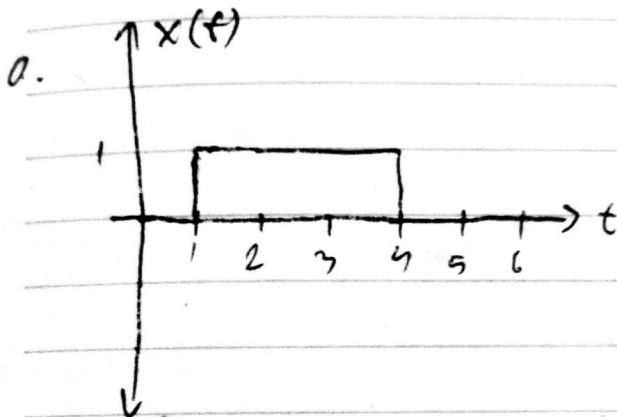


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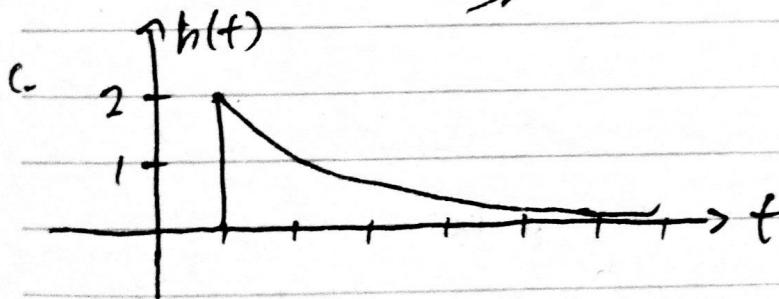
3. $x(t) = u(t-1) - u(t-4)$

$h_1(t) = 2e^{-2t}u(t)$

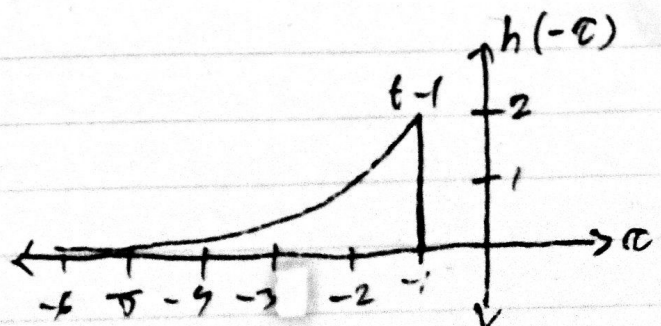
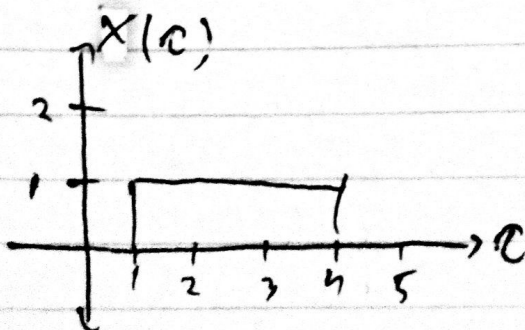
$h_2(t) = \delta(t-1)$



b. $h(t) = h_1(t) * h_2(t)$
 $= 2e^{-2t}u(t) * \delta(t-1)$
 $= 2e^{-2t}u(t-1)$



d. $y(t) = x(t) * h(t)$



$$0 \leq t < 2$$

$$Y(t) = 0$$

$$2 \leq t < 5$$

$$Y(t) = \int_1^{t-1} 1.2e^{-2\tau} d\tau$$

$$= -\frac{1}{2} \cdot 2e^{-2\tau} \Big|_1^{t-1}$$

$$= -e^{-2t+2} - (-e^{-2})$$

$$= -e^{-2t+2} + e^{-2}$$

$$5 \leq t < \infty$$

$$Y(t) = \int_1^4 1.2e^{-2\tau} d\tau$$

$$= -\frac{1}{2} 2e^{-2\tau} \Big|_1^4$$

$$\longrightarrow Y(t) = -e^{-8} - (-e^{-2})$$

$$= e^{-2} - e^{-8}$$

~~$$= -\frac{1}{2} e^{-8} - (-\frac{1}{2} e^{-2})$$

$$= \frac{e^{-2}}{2} - \frac{e^{-8}}{2} = \frac{e^{-2} - e^{-8}}{2}$$~~

~~$$Y(t) = \begin{cases} 0, & 0 \leq t < 2 \\ e^{-2} - e^{-2t+2}, & 2 \leq t < 5 \\ \frac{e^{-2} - e^{-8}}{2}, & t \geq 5 \end{cases}$$~~

$$Y(t) = \begin{cases} 0 & 0 \leq t < 2 \\ e^{-2} - e^{-2t+2} & 2 \leq t < 5 \\ e^{-2} - e^{-0} & t \geq 5 \end{cases}$$

