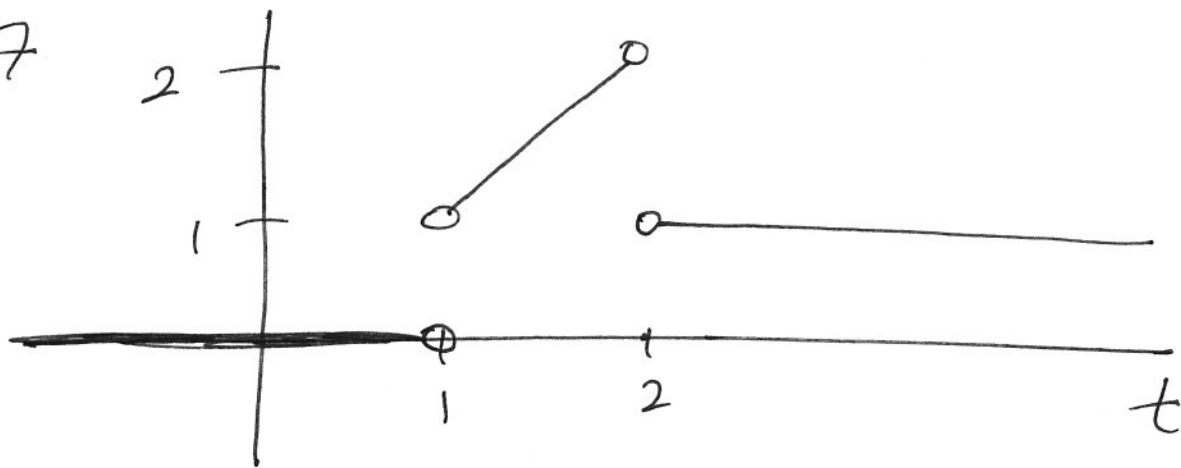


7.6

#7



$$g(t) = 0 [u(t) - u(t-1)] + t [u(t-1) - u(t-2)] + 1 [u(t-2)]$$

$$g(t) = t u(t-1) - t u(t-2) + 1 u(t-2)$$

$$g(t) = t \underline{u(t-1)} + (1-t) \underline{u(t-2)}$$

$$\mathcal{L}\{g(t)\} = \mathcal{L}\{t u(t-1)\} + \mathcal{L}\{(1-t) u(t-2)\}$$

$$= e^{-s} \mathcal{L}\{t+1\} + e^{-2s} \mathcal{L}\{1-(t+2)\}$$

$$= e^{-s} \left(\frac{1}{s^2} + \frac{1}{s} \right) + e^{-2s} \mathcal{L}\{-(t+1)\}$$

$$= e^{-s} \left(\frac{s+1}{s^2} \right) - e^{-2s} \left(\frac{s+1}{s^2} \right) = (e^{-s} - e^{-2s}) \left(\frac{s+1}{s^2} \right)$$