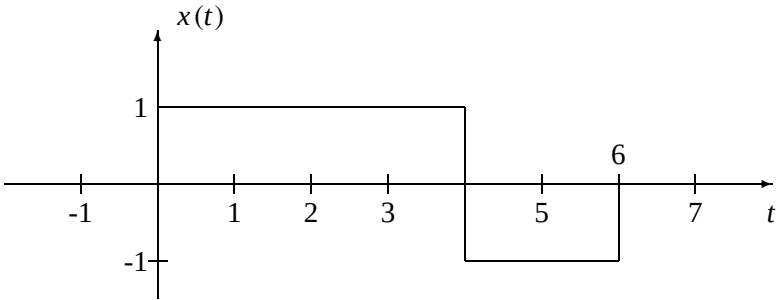
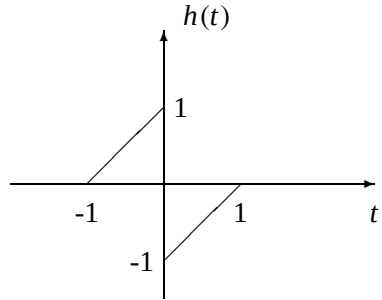
PROBLEM:

This is a problem from Problem Set #9 of Fall 2000. Try working it first before checking the answer.

If the input $x(t)$ and the impulse response $h(t)$ of an LTI system are the following:





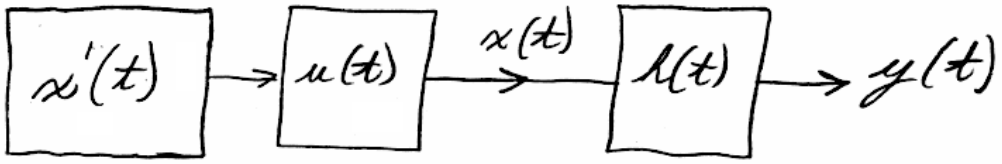
(a) Determine $y(0)$, the value of the output at $t = 0$.

(b) Find all the values of t for which the outpout $y(t) = 0$. *Note: You do not need to find $y(t)$ at any other values of t.*

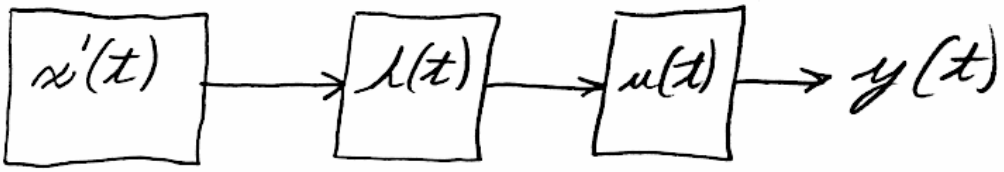
McClellan, Schafer and Yoder, *Signal Processing First*, ISBN 0-13-065562-7.
Prentice Hall, Upper Saddle River, NJ 07458.

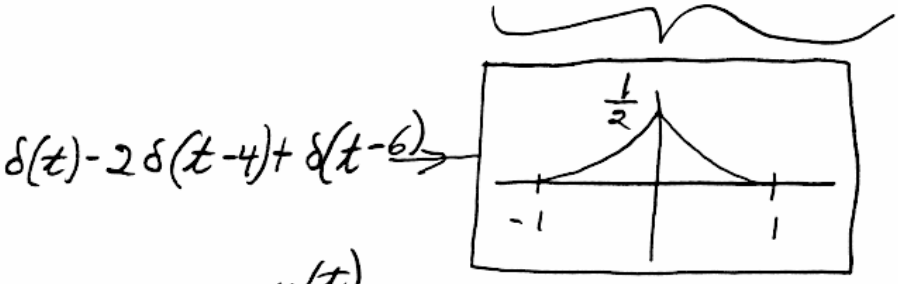
SOLUTION

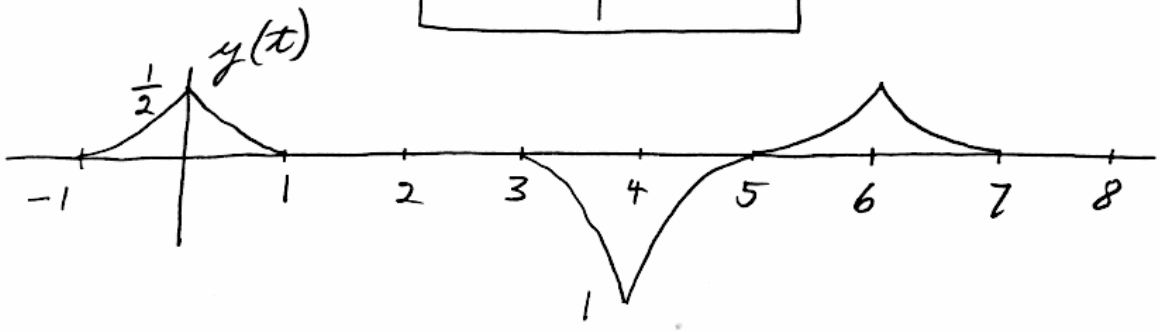
(a) This system can be represented as



Rearranging:







$y(0) = \frac{1}{2}$ $y = 0$ for $t < -1$

$-1 < t < 3$

$t = 5$

$t > 7$