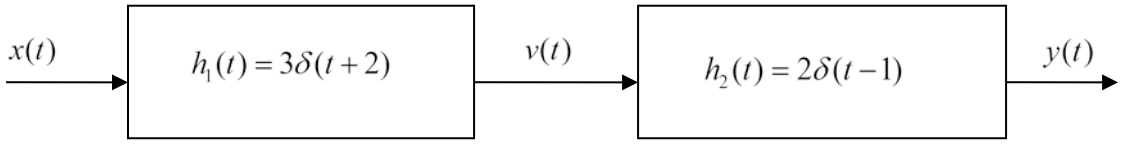
Name_____ CM_____

ECE-205 Quiz 5

1) The **impulse response** of the system



is

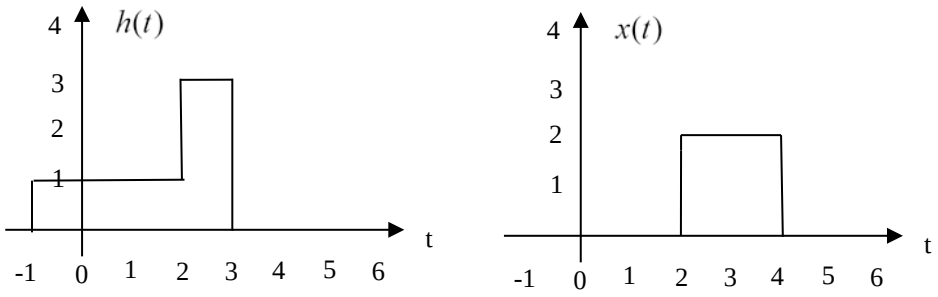
a) $h(t) = 6u(t)$ b) $h(t) = 6u(t-1)$ c) $h(t) = 6u(t+1)$

d) $h(t) = 6\delta(t)$ e) none of these

Hint: $h(t) = h_1(t) * h_2(t)$

$$h(t) = h_1(t) * h_2(t)$$

Problems **2 - 5** refer to the following linear time invariant (LTI) system, with impulse response $h(t)$ shown below on the left, and input $x(t)$ shown below on the right. The output of the system, $y(t)$, is the convolution of the impulse response with the input, $y(t) = h(t) * x(t)$.



2) Is this LTI system causal? a) Yes b) No

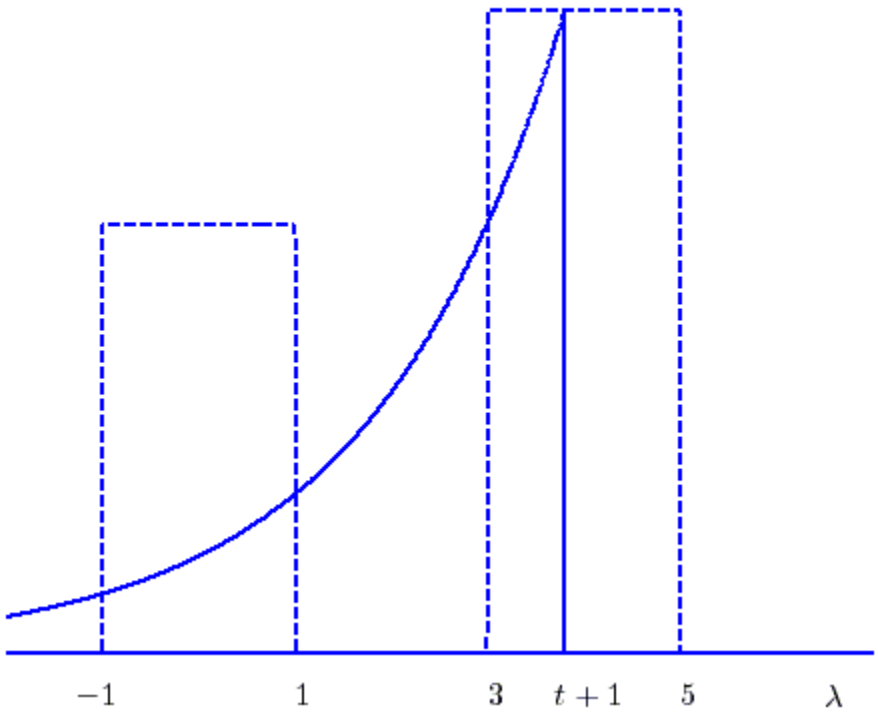
3) The maximum value of $y(t)$ is a) 4 b) 5 c) 6 d) 7 e) 8

4) $y(t)$ is zero until what time? a) 0 b) 1 c) 2 d) 3 e) 4

5) $y(t)$ will return to zero at what time? a) 6 b) 7 c) 8 d) 9 e) 10

Hint: A system is causal if $h(t) = 0$ *for* $t < 0$

For problems **6-11**, assume we are convolving two functions, and at some point we have the configuration shown below:



The output at this time can be written as the sum of two integrals,

$$y(t) = \int_a^b x(\lambda)h(t-\lambda)d\lambda + \int_c^d x(\lambda)h(t-\lambda)d\lambda \backslash$$

6) The value of the parameter a is a) -1 b) 1 c) 3 d) 5 e) t f) $t+1$

7) The value of the parameter b is a) -1 b) 1 c) 3 d) 5 e) t f) $t+1$

8) The value of the parameter c is a) -1 b) 1 c) 3 d) 5 e) t f) $t+1$

9) The value of the parameter d is a) -1 b) 1 c) 3 d) 5 e) t f) $t+1$

10) This sketch is valid for

a) $-1 < t < 1$ b) $3 < t < 5$ c) $0 < t < 2$ d) $0 < t < 1$ e) none of these

11) Is this a causal system? a) yes b) no c) it is not possible to tell