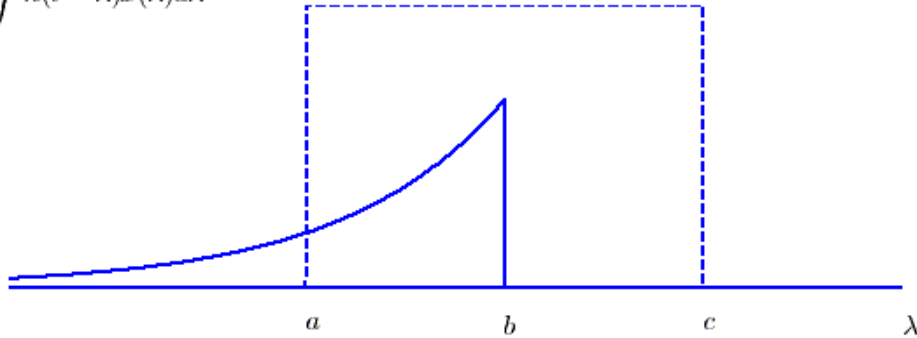


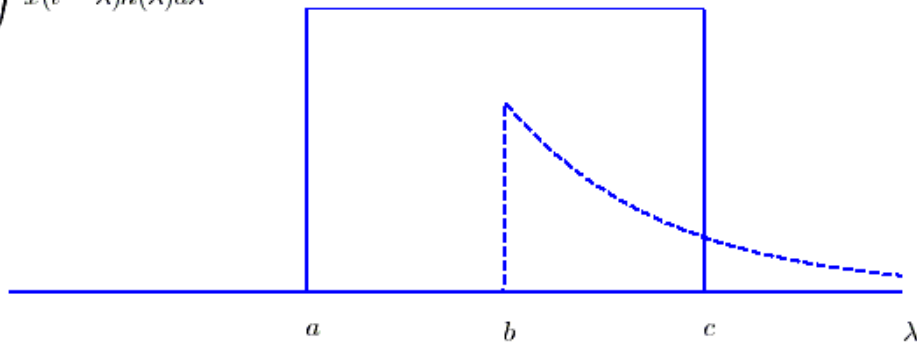


For problems **5-10**, assume we are going to convolve the impulse response  $h(t) = 2e^{-t/0.8}u(t)$  with input  $x(t) = 3[u(t+1) - u(t-1)]$ .

$$y(t) = \int h(t - \lambda)x(\lambda)d\lambda$$



$$y(t) = \int x(t - \lambda)h(\lambda)d\lambda$$



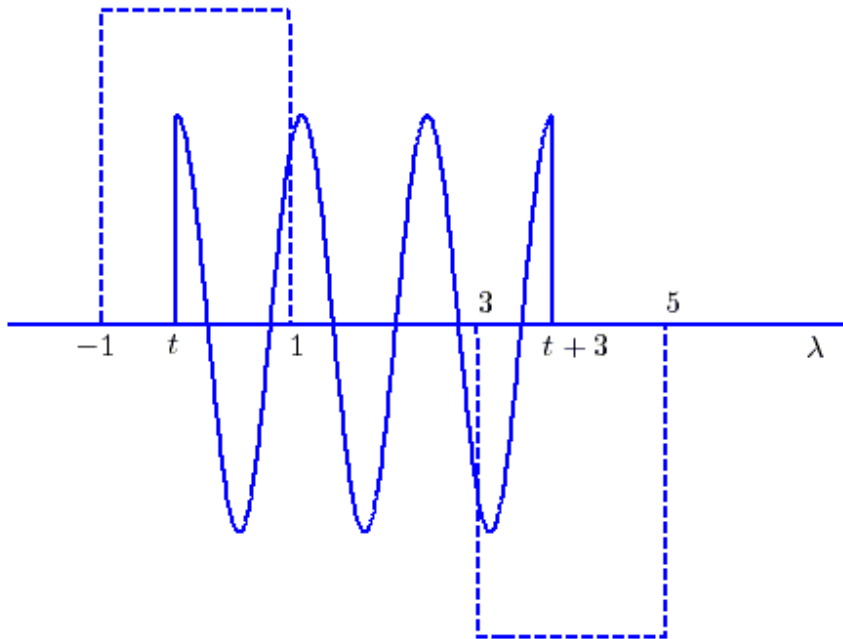
For problems **5-7**, assume we perform the convolution using the form  $y(t) = \int h(t - \lambda)x(\lambda)d\lambda$ , depicted in the top panel in the above figure.

- 5) The parameter  $a$  is equal to a) 0 b) 1 c) -1 d)  $t$  e)  $\lambda$  f) none of these
- 6) The parameter  $b$  is equal to a) 0 b) 1 c) -1 d)  $t$  e)  $\lambda$  f) none of these
- 7) The parameter  $c$  is equal to a) 0 b) 1 c) -1 d)  $t$  e)  $\lambda$  f) none of these

For problems **8-10**, assume we perform the convolution using the form  $y(t) = \int h(\lambda)x(t - \lambda)d\lambda$ , depicted in the bottom panel in the above figure.

- 8) The parameter  $a$  is equal to a)  $t-1$  b)  $t+1$  c) -1 d) 1 e) none of these
- 9) The parameter  $b$  is equal to a)  $t-1$  b)  $t+1$  c) -1 d) 1 e) none of these
- 10) The parameter  $c$  is equal to a)  $t-1$  b)  $t+1$  c) -1 d) 1 e) none of these

For problems **11-16**, 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,

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

- 11)** The value of the parameter  $a$  is a) -1 b) 1 c) 3 d) 5 e)  $t$  f)  $t+3$
- 12)** The value of the parameter  $b$  is a) -1 b) 1 c) 3 d) 5 e)  $t$  f)  $t+3$
- 13)** The value of the parameter  $c$  is a) -1 b) 1 c) 3 d) 5 e)  $t$  f)  $t+3$
- 14)** The value of the parameter  $d$  is a) -1 b) 1 c) 3 d) 5 e)  $t$  f)  $t+3$
- 15)** 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
- 16)** Is this a causal system? a) yes b) no c) it is not possible to tell

Answers: 1-a, 2-d, 3-d, 4-c, 5-c, 6-d, 7-b, 8-a, 9-e, 10-b, 11-e, 12-b, 13-c, 14-f, 15-d, 16-b