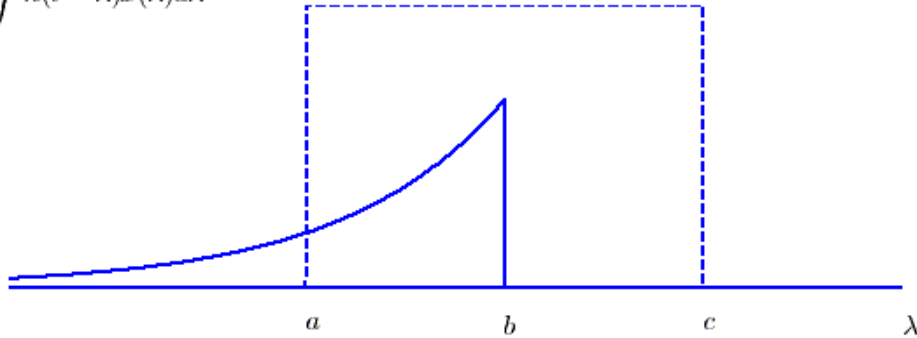
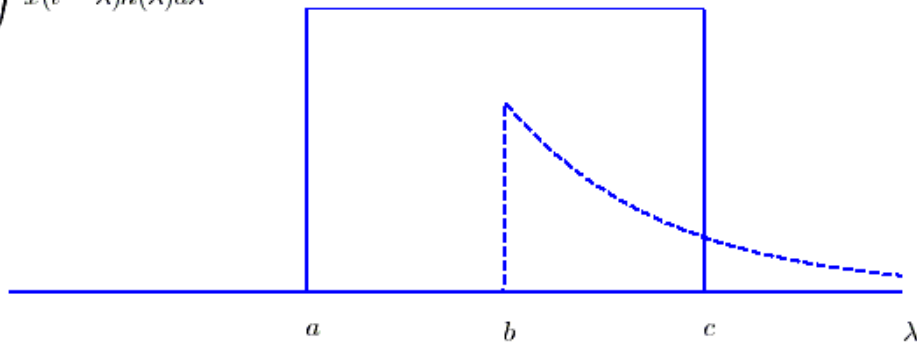


For problems **5-10**, assume we are going to convolve the impulse response $h(t) = 2e^{-t/0.8}u(t)$ with input $x(t) = 3[u(t+1) - u(t-1)]$.

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



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



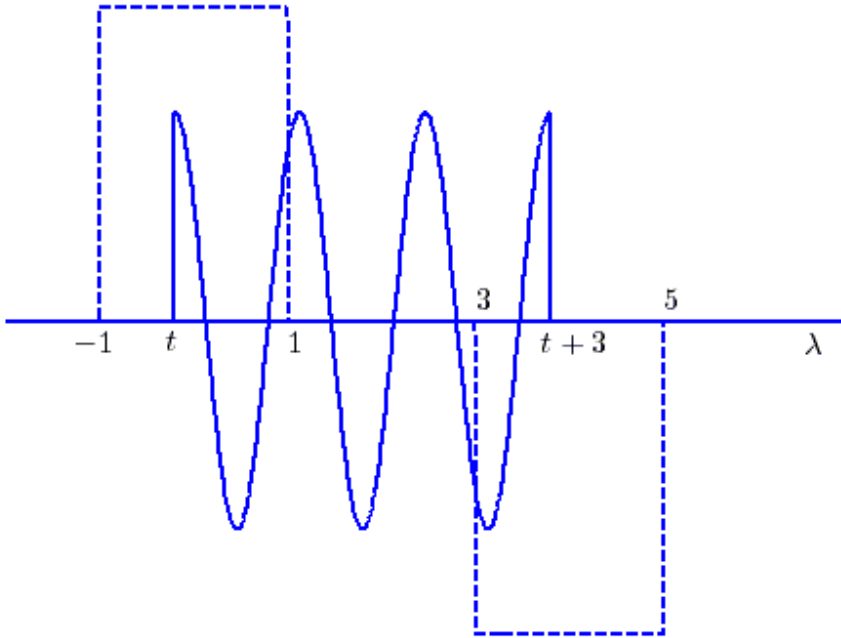
For problems **5-7**, assume we perform the convolution using the form $y(t) = \int h(t - \lambda)x(\lambda)d\lambda$, depicted in the top panel in the above figure.

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