

Quiz on Continuous-Time Convolution

A companion to Joy of Convolution. It is recommended that you use the applet to explore the question, and then see if you can mathematically justify your conclusion.

1. If the unit-impulse response of an LTI system and the input signal both are rectangular pulses, then the output will be a
 - rectangular pulse
 - triangular pulse
 - ramp function
 - none of the above
2. If $h(t)$ is a unit-step function and $x(t)$ is a unit-ramp function, then the output $y(t)$ will be a
 - step function
 - ramp function
 - triangular pulse
 - quadratic function
3. If an input signal is applied to two LTI systems with respective unit-impulse responses $h(t)$ and $3h(t-2)$, then the response of the second system is the response of the first
 - amplitude scaled by 3 and delayed by 2
 - amplitude scaled by 3 and advanced by 2
 - amplitude scaled by 3
 - none of the above
4. If $h(t) = 2\sin(\omega t)u(t)$, where $u(t)$ is the unit-step function and ω is large, then the behavior of the system is such that
 - low frequency input signals are attenuated
 - low frequency input signals are amplified
 - high frequency signals are amplified
 - the response to a unit-step input is identically zero
5. If $x(t) = h(-t)$, then
 - $y(t) = 2h(t)$
 - $y(t) = y(-t)$
 - $y(t) = -y(-t)$
 - the largest value of $y(t)$ occurs at $t = 0$