1. Section 3.5 Participation Activities
   3.5.1: Convolution properties.
   3.5.2: Convolution of two delayed rectangular pulses, using the properties.
   3.5.3: Convolution properties.
   3.5.4: Common convolutions.
   3.5.5: Using convolution properties.

2. (Concepts: LTI systems in parallel and series)
   Two LTI systems have impulse responses of $h_1(t) = \text{rect}\left(\frac{t-10}{5}\right)$ and $h_2(t) = \text{rect}\left(\frac{t+10}{5}\right)$.
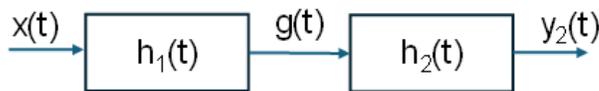   a. System 1 is constructed with $h_1(t)$ and $h_2(t)$ as shown below.
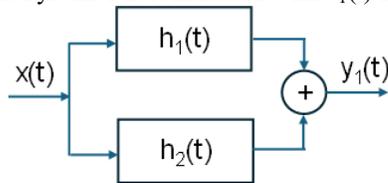
   Find the impulse response of System 1.

   System 1

   b. System 2 is constructed with $h_1(t)$ and $h_2(t)$ as shown below.

   Find the impulse response of System 2.

   System 2

   c. For x(t)=$\text{rect}\left(\frac{t-20}{5}\right)$+$\text{rect}\left(\frac{t+20}{5}\right)$ find and plot the output, $y_1(t)$ of System 1.
   d. For x(t) = x(t) = δ(t+12) + δ(t) + δ(t-12) find and plot the system output $y_2(t)$ in System 2.

3. (Concept: Convolution with a step function)
   For x(t) = 4sin(πt)rect(t-.5) and h(t)=u(t) find h(t)*x(t) and plot.

4. Section 3.6 Participation Activities
   3.6.1: BIBO stability and causality.
   3.6.2: BIBO stability.
   3.6.3: BIBO stability for complex exponential (sinusoidal) signals.

5. (Concept: convolution of exponential signals)
   Find and plot the convolution of the following function x(t) = $2u(t)e^{-t/2}$ and h(t) =$4u(t)e^{-t/4}$.

6. (Concept: Determining causality and stability from the impulse response)

   a. h(t)=100 rect($t + 5$) is a stable system, TRUE or FALSE
   b. h(t)=100 rect($t + 5$) is a causal system, TRUE or FALSE
   c. h(t)=100 rect($t + 2$)$e^{t/3}$ is a stable system, TRUE or FALSE
   d. h(t)=100 rect($t + 2$)$e^{t/3}$ is a causal system, TRUE or FALSE
   e. h(t)=100 rect($t - 2$)$e^{t/3}$ is a stable system, TRUE or FALSE
   f. h(t)=100 rect($t - 2$)$e^{t/3}$ is a causal system, TRUE or FALSE
   g. h(t)=100 $u(t)e^{t/3}$ is a stable system, TRUE or FALSE
   h. h(t)=100 $u(t)e^{t/3}$ is a causal system, TRUE or FALSE

7. (Concept: Using a comb function and convolving a comb function with a prototype pulse)
   A comb function or infinite impulse train is defined as $\delta_T(t) = \sum\limits_{k=-\infty}^{\infty} \delta(t-kT)$.

   Let $\delta_3(t) = \sum\limits_{k=-\infty}^{\infty} \delta$(t-3k) and g(t) = tri(t),
   a. Find y(t)= g(t)*$\delta_4(t)$ and plot y(t).
   b. Is y(t) periodic, if so what is the period?

Hint: Sketch a plot of $\delta_4(t)$.