The objective of the homework is to be able to calculate convolution using pencil and paper.

1. Calculate the output signal using convolution.
   
   (a) (20 pts) \( x(t) = e^{2t}u(-t) \)
   \( h(t) = u(t - 3) \)

   (b) (25 pts) \( x(t) = \begin{cases} 1 & 0 \leq t \leq T \\ 0 & \text{otherwise} \end{cases} , h(t) = \begin{cases} t & 0 \leq t \leq 2T \\ 0 & \text{otherwise} \end{cases} \)

   (c) (20 pts) \( x[n] = \alpha^n u[n] \), \( h[n] = u[n] \)

2. (35 pts) MATLAB Problem: Write your own MATLAB function that performs convolution sum. Name the function \( y = \text{myconv}(x, h) \), where \( x \) is the input signal, \( h \) is the impulse response, and \( y \) is the output. Here is one place you can find help: https://www.mathworks.com/help/matlab/matlab_prog/create-functions-in-files.html. There are also plenty of youtube videos that help you go through the process. You need to turn in your code. Test your code on the first problem of HW4 and see if you get consistent result from MATLAB’s built-in function \( \text{conv}() \).