

**EE322 Fall 2012 Homework Problem Set 17 (PS17)**

1. Find  $x(t)*h(t)$ , where  $x(t) = \text{rect}\left(\frac{t-3}{2}\right)$  and  $h(t) = e^t \cdot [u(t+3) - u(t+2)]$ .

Demonstrate the specific cases for using the convolution integral, and show your integration.

2. Sketch  $x(t)*h(t)$ , where  $x(t) = \text{rect}\left(\frac{t-1}{2}\right)$  and  $h(t) = \delta(t+2) + u(t)$ .

3. A system has an impulse response given by:  $h(t) = \delta(t-1) + 0.5\delta(t-2) + \text{rect}(t-4)$ . Is this system BIBO stable? Prove yes or no.

4. A system has an impulse response given by:  $h(t) = -t^{-3}u(t-1)$ . Is this system BIBO stable? Prove yes or no.