UNIVERSITY of HOUSTON | ECE

ECE 3337: Signals & Systems Analysis,
Class Worksheet 3

Name:

---

1. (25 points) Plot the following waveforms:

$$x_1(t) = r(t-1) + r(t-4)$$
$$x_2(t) = r(t-1) - r(t-4)$$
$$x_3(t) = r(t-1) - 2r(t-4)$$
$$x_4(t) = \text{rect}\left(\frac{t-1}{2}\right) + \delta(t)$$
$$x_5(t) = r(t)\text{rect}\left(\frac{t-1}{2}\right)$$

2. (30 points) calculate the following integrals:

$$I_1 = \int_{-1}^{+1} \delta(t)\,dt$$
$$I_2 = \int_{-1}^{+1} \delta(3t)\,dt$$
$$I_3 = \int_{-\infty}^{+\infty} t\delta(at-b)\,dt$$

3. (25 points) Plot the following waveforms:

- $x_6(t) = e^{-t/\tau}$
- $x_7(t) = 2u(t)e^{-t/\tau}$
- $x_8(t) = 2u(-t)e^{-t/\tau}$
- $x_9(t) = 2u(-t)e^{t/\tau}$
- $x_8(t) = 2u(t)(1 - e^{-t/\tau})$

4. (20 points) Calculate the average power of the following signal. Use eq. 1.36, 1.37, & Euler's Identity.

$$x(t) = (3 + 2j)e^{j\,2\pi t/3}$$