

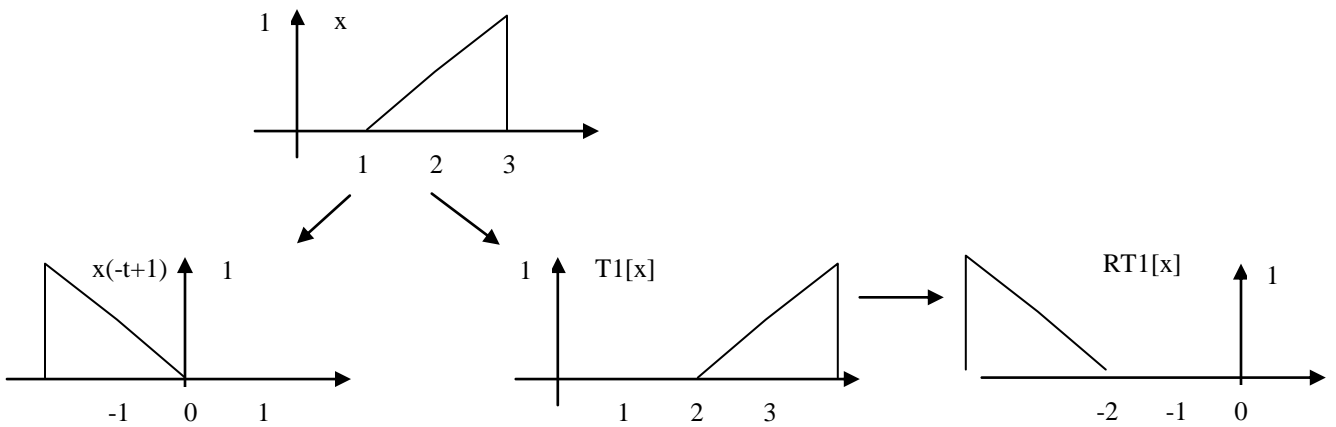
EEE 203, Test 1

NAME: _____ SOLUTIONS _____

30min, 2 Problems, Equal Credit, Closed-book, Closed-notes, calculator and Transform tables allowed

Problem 1.

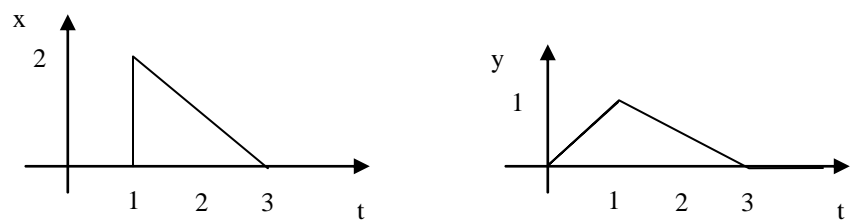
Consider the signal $x(t)$ whose graph is shown below. Sketch the following signals: $x(-t+1)$, $RT_1[x]$, where R denotes the reflection operation and T_{t_0} denotes shift delay operation by t_0 .



Problem 2.

Describe the following signals in terms of elementary functions (δ , u , r , ...) and compute

$\int_{-\infty}^{\infty} x(t)\delta(t-1)dt$ and $\int_{-\infty}^{\infty} y(t)\delta(t-1)dt$.



$$x(t) = 2u(t-1) - r(t-1) + r(t-3)$$

$$\int x(t)\delta(t-1)dt = \frac{x(1^+) + x(1^-)}{2} = \frac{2+0}{2} = 1$$

$$y(t) = r(t) - r(t-1) - \frac{1}{2}r(t-1) + \frac{1}{2}r(t-3) = r(t) - \frac{3}{2}r(t-1) + \frac{1}{2}r(t-3)$$

$$\int y(t)\delta(t-1)dt = \frac{y(1^+) + y(1^-)}{2} = \frac{1+1}{2} = 1$$