EEE2035F: Signals and Systems I

Class Test 1

3 April 2008

Name:

Student number:

Information

- The test is closed-book.
- This test has *four* questions, totalling 20 marks.
- Answer *all* the questions.
- You have 45 minutes.

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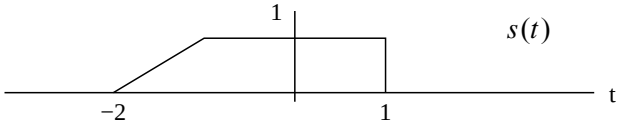
1. (5 marks) Consider the signal $s(t)$ below:



Plot the following:

(a) $x_1(t) = -2s(t)$

(b) $x_2(t) = s(t+2)$

(c) $x_3(t) = s(1-t)$

(d) $x_4(t) = s(t)\delta(\frac{1}{2} - t)$.

2. (5 marks) A system has an impulse response

$$h(t) = 3e^{-10t}u(t-1)$$

Find the response of the system to the input $x(t) = u(t-1)$.

3. (5 marks) If $h(t) = e^{-2t}u(t)$ and $x(t) = \delta(t-1) + 2\delta(t+2)$, find the signal defined by

$$y(t) = \int_{-\infty}^{\infty} x(\lambda)h(t-\lambda)d\lambda.$$

4. (5 marks) If $h(t) = e^{2t}$ and $x(t) = \delta(t-1) + 2\delta(t+2)$, find the signal defined by

$$y(t) = \int_{-\infty}^{t} x(\lambda)h(\lambda)d\lambda.$$