

EEE235F

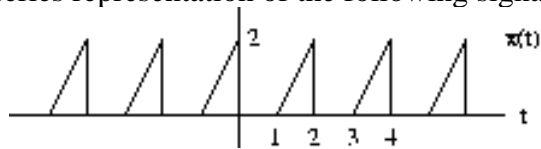
06/05/2005

### MINI TEST 3

NAME: \_\_\_\_\_

STUDENT NO: \_\_\_\_\_

- 1.) Find a Fourier series representation of the following signal: (10 marks)



2.) The periodic impulse train is given by the following formula:

$$x(t) = \sum_{k=-\infty}^{\infty} \delta(t - nT)$$

Sketch this signal, and find its Fourier series representation (5 marks)

3.) A signal  $x(t)$  has the Fourier series representation

$$x(t) = \sum_{k=-\infty}^{\infty} c_k^x e^{jk\omega_0 t}$$

for some coefficients  $c_k^x$ , where  $-\infty < t < \infty$  and  $\omega_0 = 2\pi/T$ . Find the Fourier coefficients  $c_k^v$  for the signal

$$v(t) = x(t) \cos\left(\frac{2\pi t}{T}\right).$$

(10 marks)