

EE 410
Midterm 2
100pts total
(sample)

Problem set 1(20pt)

Find the power and energy of the following signals.

a) $x(t) = \cos^2(t)$

b) $y[n] = (-0.1)^n u[n - 1]$

Problem set 2(20pt)

Discuss linearity, time-invariance and causality of the following systems:

a) $y(t) = (2 - \sin(t + 7))x(t)$

b) $\frac{d^4 y(t)}{dt^4} + x(t) \frac{dy(t)}{dt} - 2y(t) = \frac{d^2 x(t)}{dt^2}$

Problem set 3(30pt)

Calculate and plot the zero-state response of an LTI system to $x(t) = u(t - 4) - u(t - 1)$ if the impulse response of the system is $h(t) = (1 - |t - 2|)[u(t - 1) - u(t - 2)]$. You must use the graphical method.

Problem set 4(30pt)

Plot $x(3 - 4t)$ if $x(t) = \Delta(\frac{t}{3})$