

Name _____ CM _____

ECE-300, Quiz #2

1) Fill in the following table with a Y (yes) or N (no) for each of the system models given. Assume $-\infty < t < \infty$ for all of the systems.

System Model	Linear?	Time-Invariant?	Causal?	Memoryless?
$y(t) = 3\sin(t+1)x(t-1)$				
$y(t) = x\left(\frac{t}{2}-1\right)$				
$y(t) = x(1-t)$				
$\dot{y}(t) + t^2 y(t) = \sin(t)x(t)$				

2) The average power in the signal $x(t) = ce^{j\omega t}$ is

- a) 0 b) $\frac{|c|}{2}$ c) $|c|^2$ d) $\frac{|c|^2}{2}$

3) The average power in the signal $x(t) = A\cos(\omega t + \theta)$ is

- a) $\frac{|A|}{2}$ b) $|A|$ c) A^2 d) $\frac{A^2}{2}$

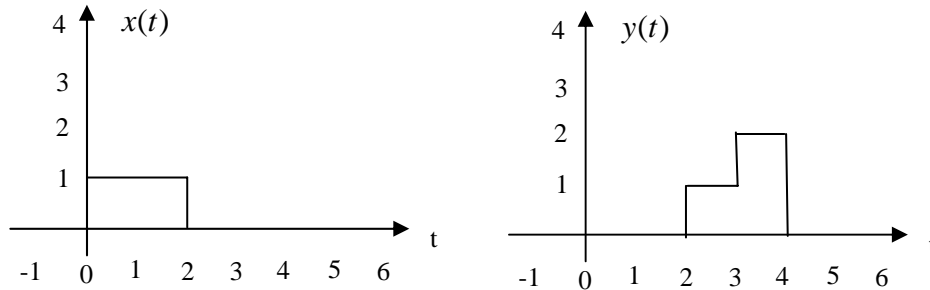
4) The average power in the signal $x(t) = ce^{j\omega t} + de^{j2\omega t}$ is

- a) 0 b) $\frac{|c|}{2} + \frac{|d|}{2}$ c) $|c|^2 + |d|^2$ d) $\frac{|c|^2}{2} + \frac{|d|^2}{2}$

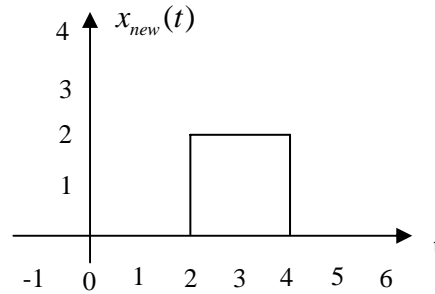
5) The average power in the signal $x(t) = A\cos(\omega t + \theta) + B\cos(2\omega t + \phi)$ is

- a) $\frac{|A|}{2} + \frac{|B|}{2}$ b) $|A| + |B|$ c) $A^2 + B^2$ d) $\frac{A^2}{2} + \frac{B^2}{2}$

6) Assume we know a system is a linear time invariant (LTI) system. We also know the following input $x(t)$ – output $y(t)$ pair:



If the input to the system is now $x_{new}(t)$



Which of the following best represents the output of the system?

- a) $y_a(t)$ b) $y_b(t)$ c) $y_c(t)$ d) $y_d(t)$

