ECE-300, Quiz #2

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

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

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

a) $\dfrac{A}{2}$ b) A c) A^2 d) $\dfrac{A^2}{2}$

3) The signal $x(t) = A\cos(\omega t)[u(t) - u(t-10)]$ is

a) an energy signal b) a power signal   c) neither an energy or power signal

4) The function $x(t) = 2\cos(2t) + j2\sin(2t)$ is

a) an energy signal   b) a power signal   c) neither

5) The function $x(t) = 2u(t) - u(t-1) - 2u(t-2)$ is

a) an energy signal   b) a power signal   c) neither

6) The function $x(t) = e^{j\frac{t}{4}} + e^{j\frac{t}{2}}$ is

a) not periodic
b) periodic with fundamental period π second
c) periodic with fundamental period 2π seconds
d) periodic with fundamental period 8π period seconds

7) The function $x(t) = \cos(t) + \sin(2\pi t)$ is

a) not periodic
b) periodic with period 1 second
c) periodic with period π seconds
d) periodic with period 2π seconds

For problems 8-11 consider the following mathematical model of a system

$$y(t) = 3\sin(t+1)x(t-1)$$

8) Is this model **linear**?   a) Yes b) No

9) Is this model **time-invariant**?   a) Yes b) No

10) Is this model **causal**?   a) Yes b) No

11) Is this model **memoryless**?   a) Yes b) No

For problems 12-15 consider the following mathematical model of a system

$$y(t) = x\left(\frac{t}{2} - 1\right)$$

12) Is this model **linear**?   a) Yes b) No

13) Is this model **time-invariant**?   a) Yes b) No

14) Is this model **causal**?   a) Yes b) No

15) Is this model **memoryless**?   a) Yes b) No

For problems 16-19 consider the following mathematical model of a system

$$y(t) = x(1-t)$$

16) Is this model **linear**?   a) Yes b) No

17) Is this model **time-invariant**?   a) Yes b) No

18) Is this model **causal**?   a) Yes b) No

19) Is this model **memoryless**?   a) Yes b) No