EE424 Homework 4

1) For each of the following systems, determine whether the system is (a) linear, (b) time-invariant, (c) causal, (d) memoryless, and (e) stable.

(1) $y[n] = \cos(0.12n) \cdot x[n]$

(2) $y[n] = 2x[n] + 5$

(3) $y[n] = x[n-2]$

(4) $y[n] = nx[n]$

(5) $y[n] = x[n] + 2x[n+1]$

(6) $y[n] = x[-n]$

(7) $y[n] = x[2n]$

(8) $y[n] = e^{x[n]}$

	Linear	Time-Invariant	Causal	Memoryless	Stable
System (1)					
System (2)					
System (3)					
System (4)					
System (5)					
System (6)					
System (7)					
System (8)					

2) For each of the following impulse responses of LTI systems, determine whether the system is (a) causal, and (b) stable.

(1) $h[n] = u[n]$

(2) $h[n] = \delta[n]$

(3) $h[n] = \delta[n] - \delta[n-1]$

(4) $h[n] = u[n] - u[n-1]$

	System (1)	System (2)	System (3)	System (4)
Causal				
Stable				