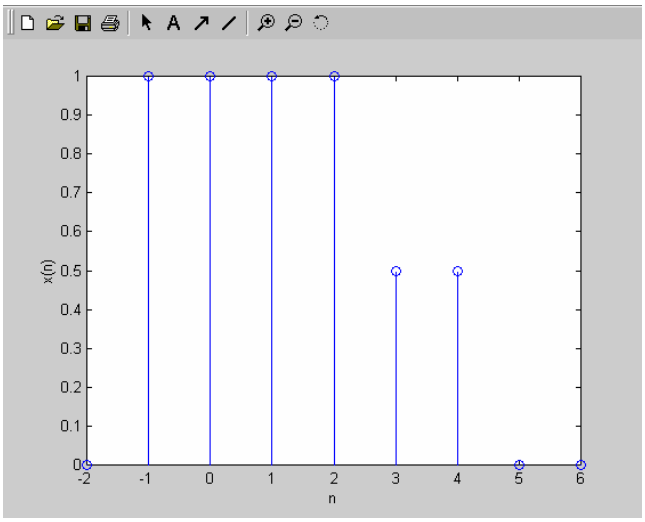
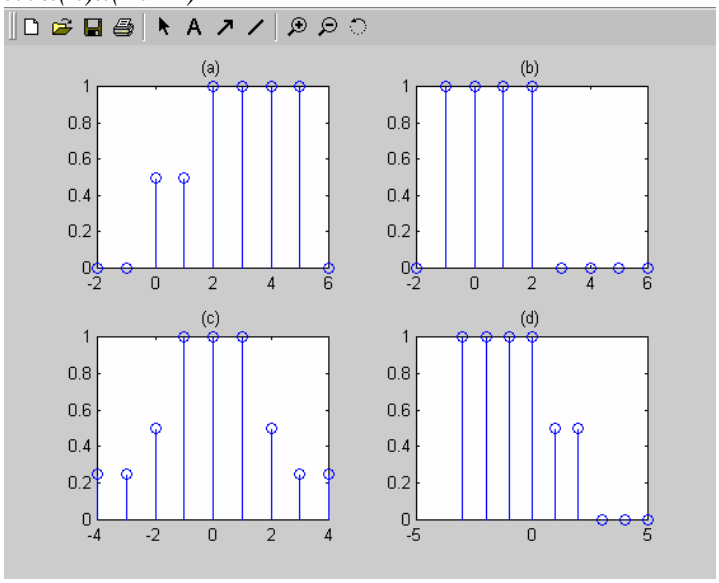
Dr. J. Dickerson
EE524, Fall 2006

EE524 Homework 1-Due 28 August.

1. A discrete–time signal *x(n)*is shown below.



Match the figures to the appropriate equation:
i. Even part of *x(n)*
ii. *x(4-n)*
iii. x(n+2)
iv. x(n)u(-n+2)



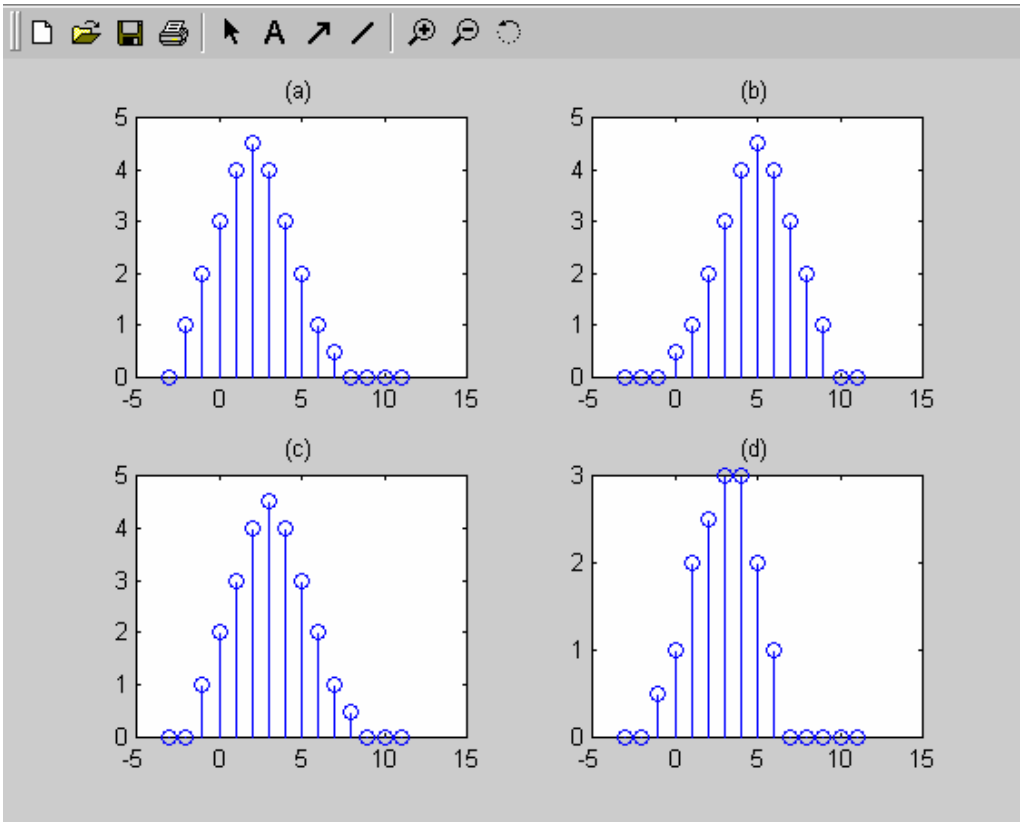
2. A discrete-time system can have many qualities as shown in the table below. For the two systems given at the top of the table, list whether or not these properties hold.

Property	$y(n)=x(n)\cos(\omega_0 n)$	$y(n)=round(x(n))$
Dynamic?		
Linear?		
Time-Invariant?		
Causal?		
Stable?		

3. Under what conditions (on the system) does the linear convolution theorem hold? (when does $y[k]=\sum_{n=-\infty}^{\infty} h[k-n]x[n]$), Prove the convolution theorem using linear system theory.

4. Which of the following pictures represent the convolution of:

$x=\left[0,1,\underset{\uparrow}{1},1,1,0.5,0.5,0\right]; h=\left[0,\underset{\uparrow}{1},1,1,1,1,0\right]$



Do the following problems from the textbook:
2.15 a,b
2.25
2.27
2.60
2.64