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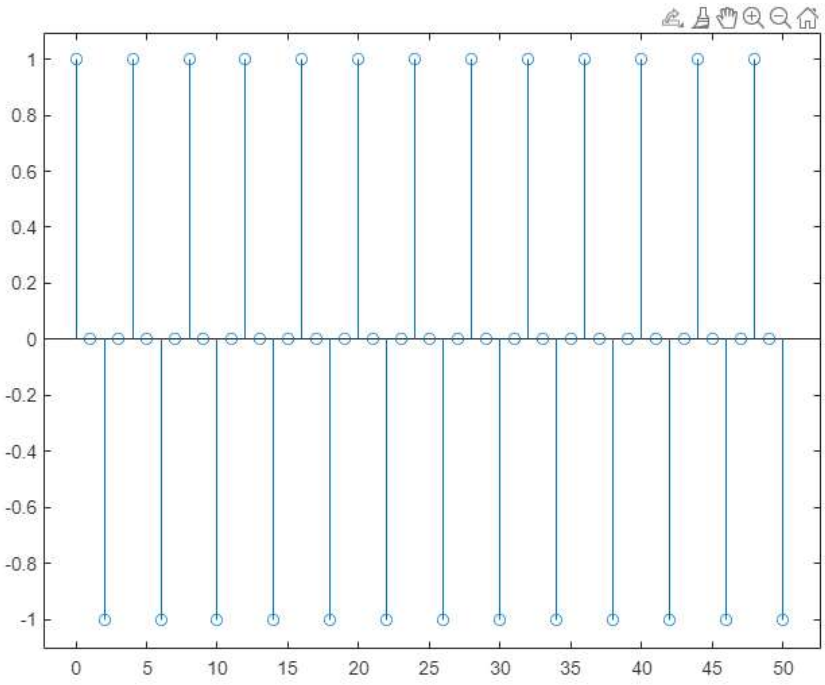
EE111 section 021

Lab 1

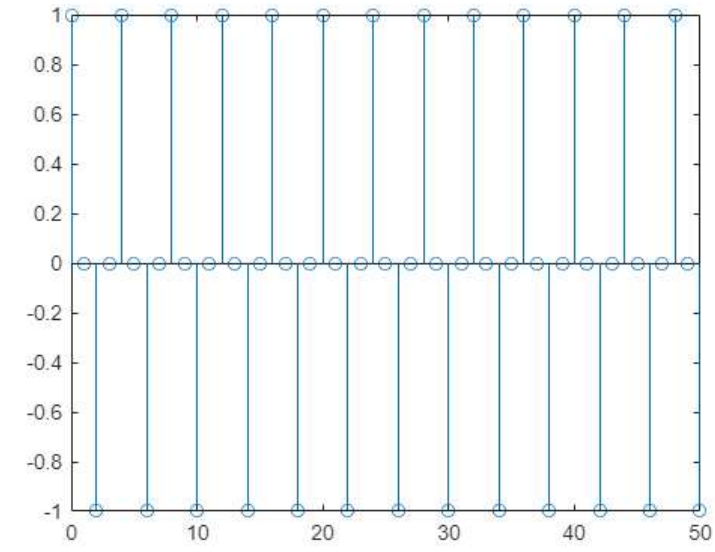
1) cos((pi*n)/2): since we are only changing by pi/2 we can see that this graph will only have 1,-1,0 values



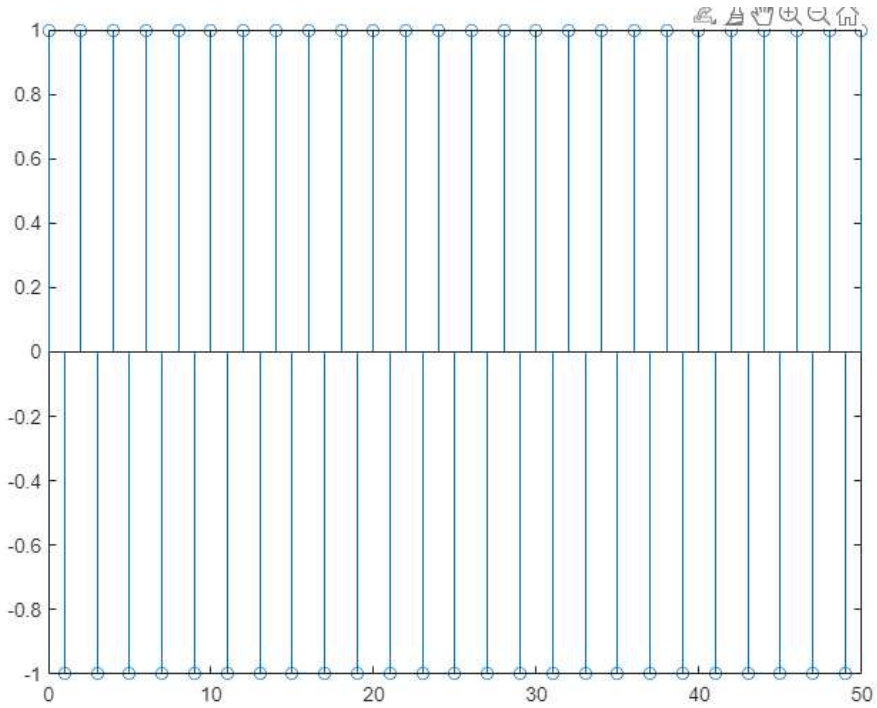

2) cos(((5/2)*pi*n)) the 5/2 doesnt affect the graph since we are throwing it in a cos

```
x = cos((5/2)*pi*n)

stem(n,x)
```

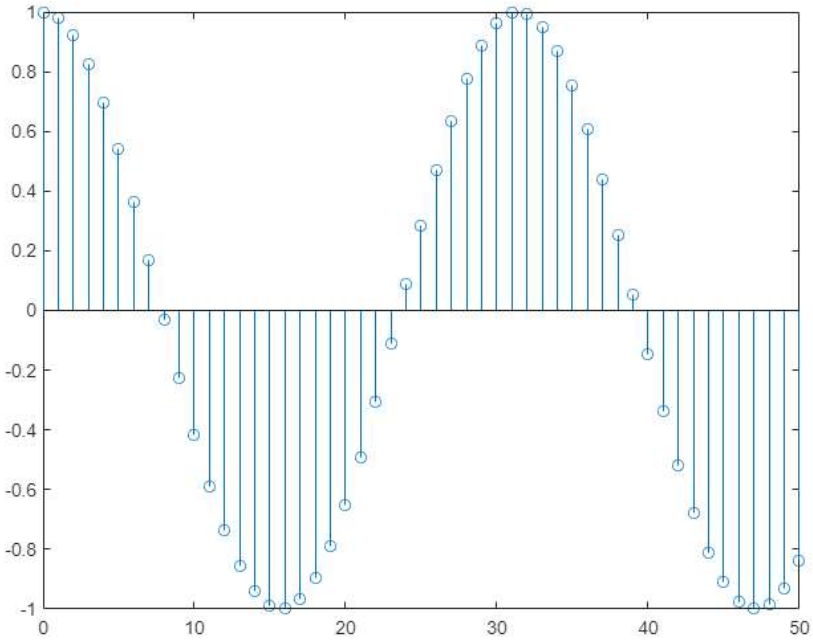


3) cos(pi*n) this is like the first graph except it only oscillates between -1,1 since we are

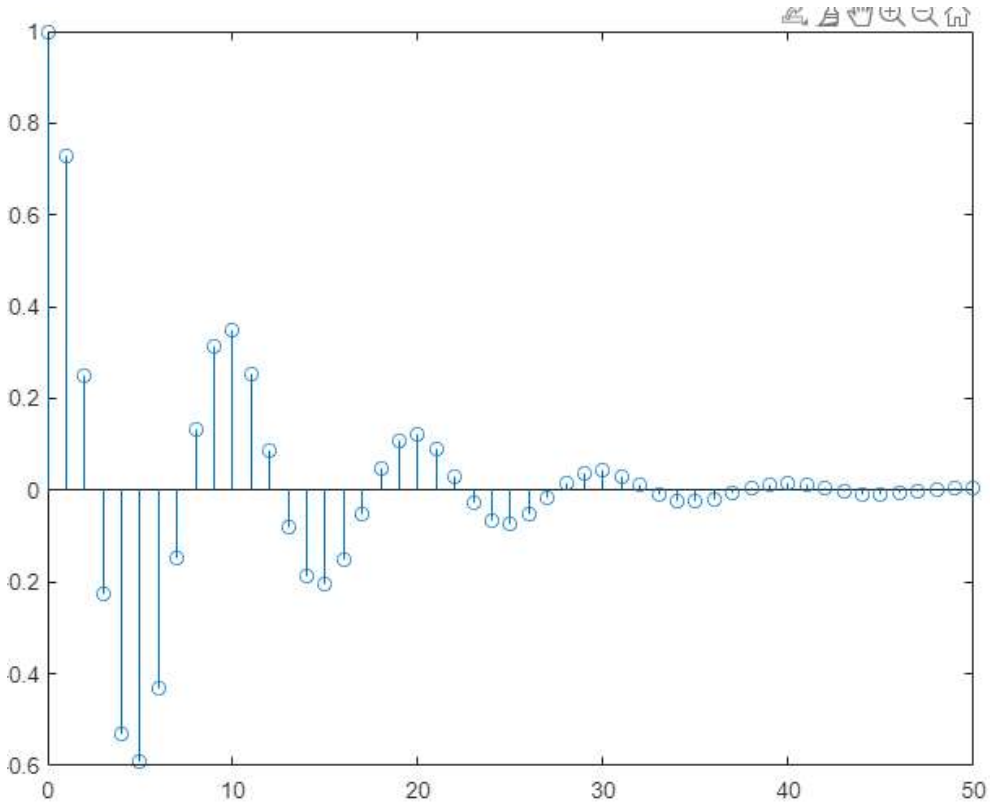


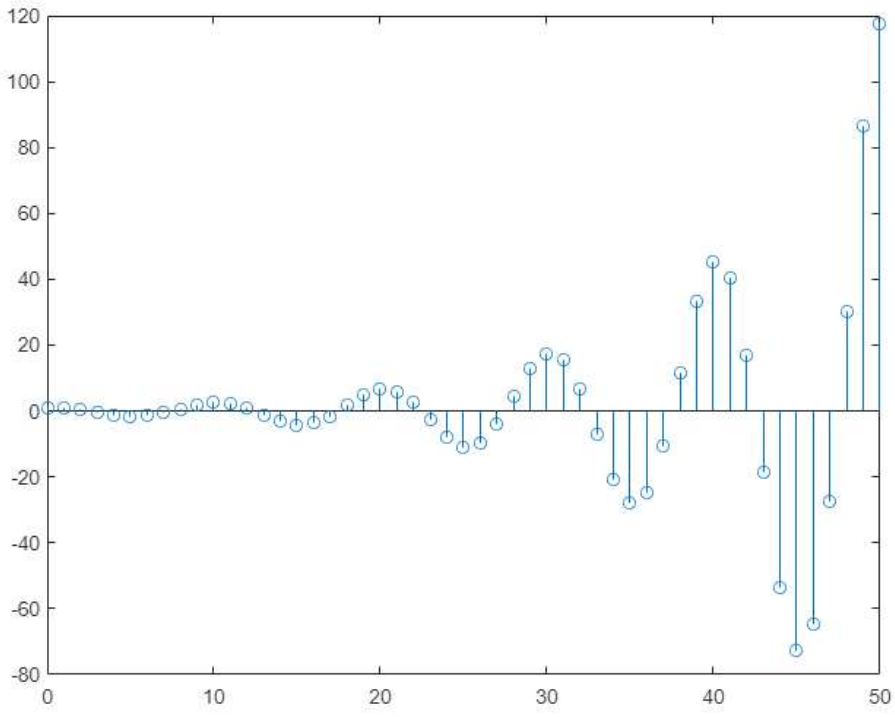

changing at a rate if pi instead of pi/2

4) cos(0.2*pi) This shows the cosine wave



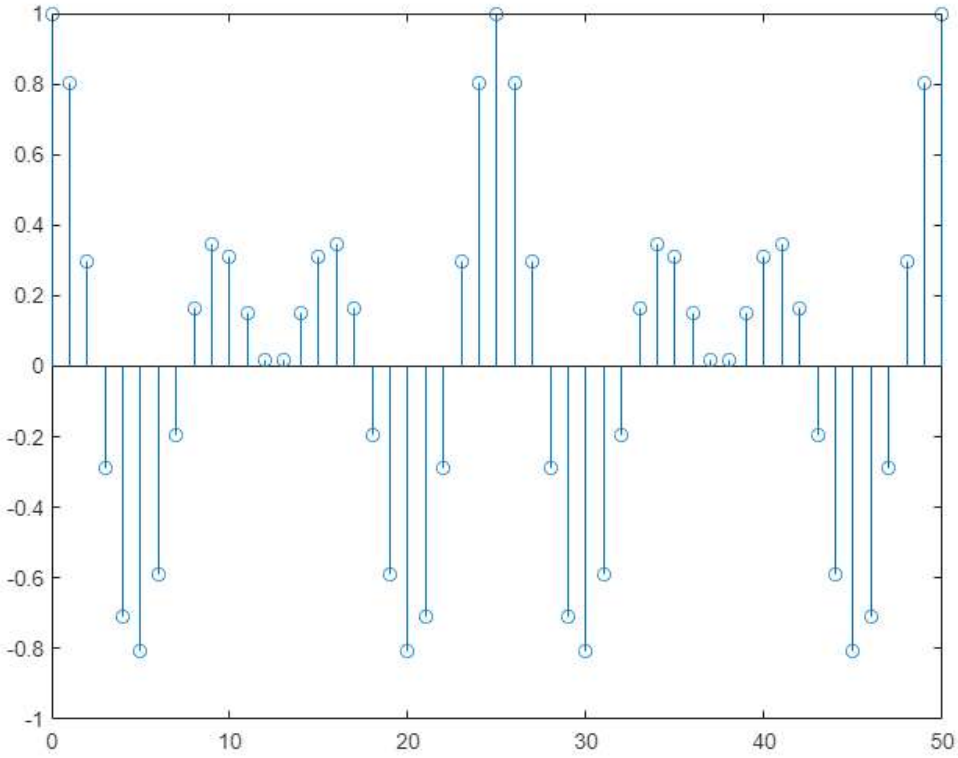
5) 0.9^n cos(pi/5*n) Shows what happens to a wave when you multiply it by a number less than 1 to the nth power



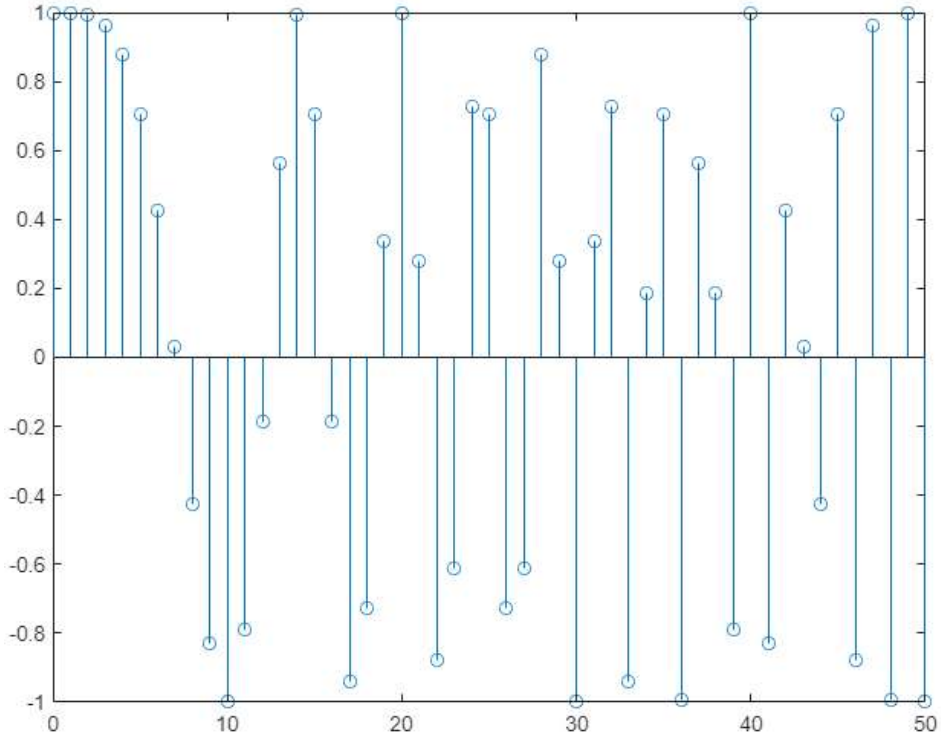




6) 1.1^n cos(pi/5*n) Shows what happens to a wave when you multiply it by a number greater than 1 to the nth power

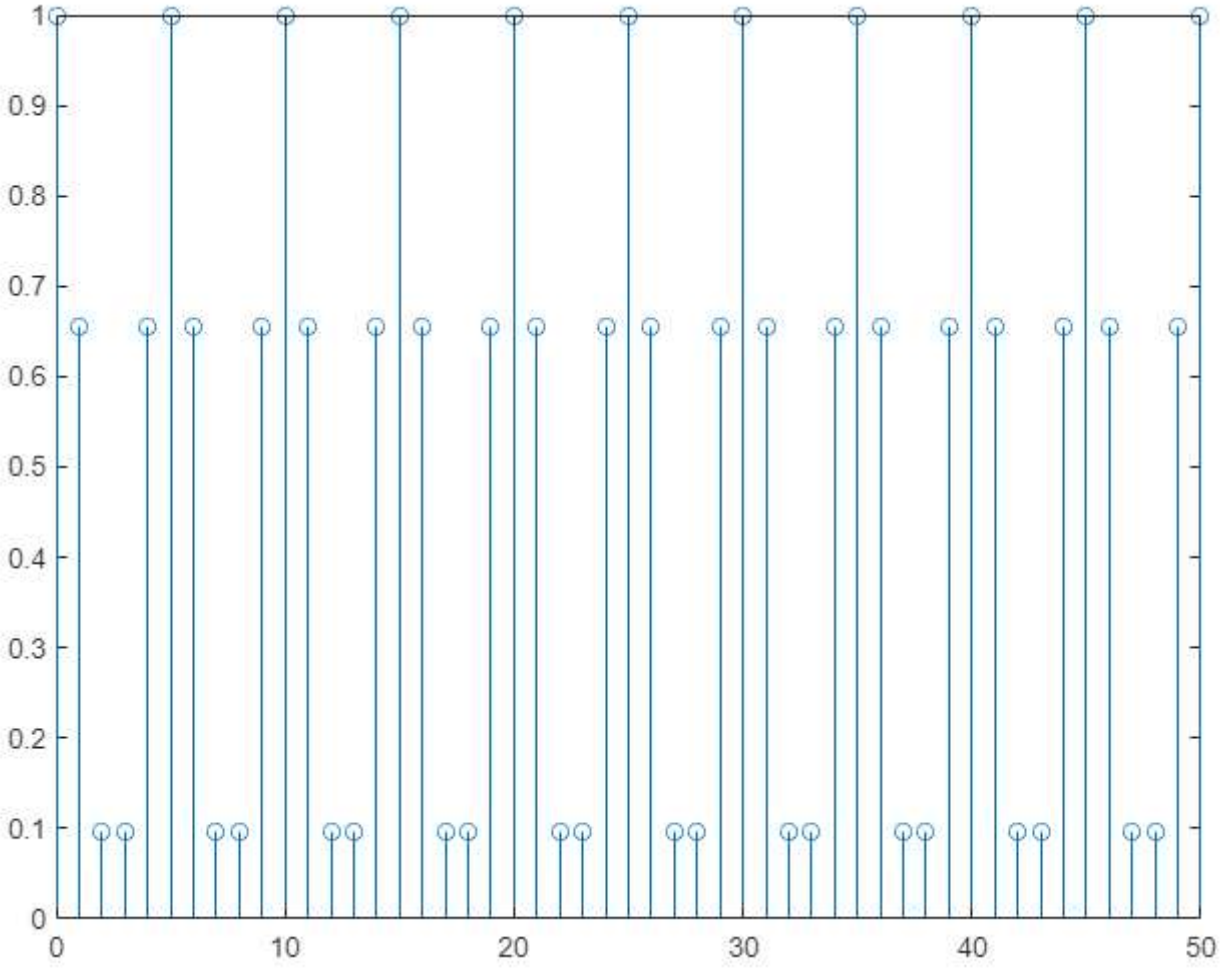
7) cos((pi/5)n)*cos((pi/25)n) shows the multiplication of two different sin waves




8) cos((pi/100)*n.^2) shows what happens when a sin wave is given a variable to the nth power

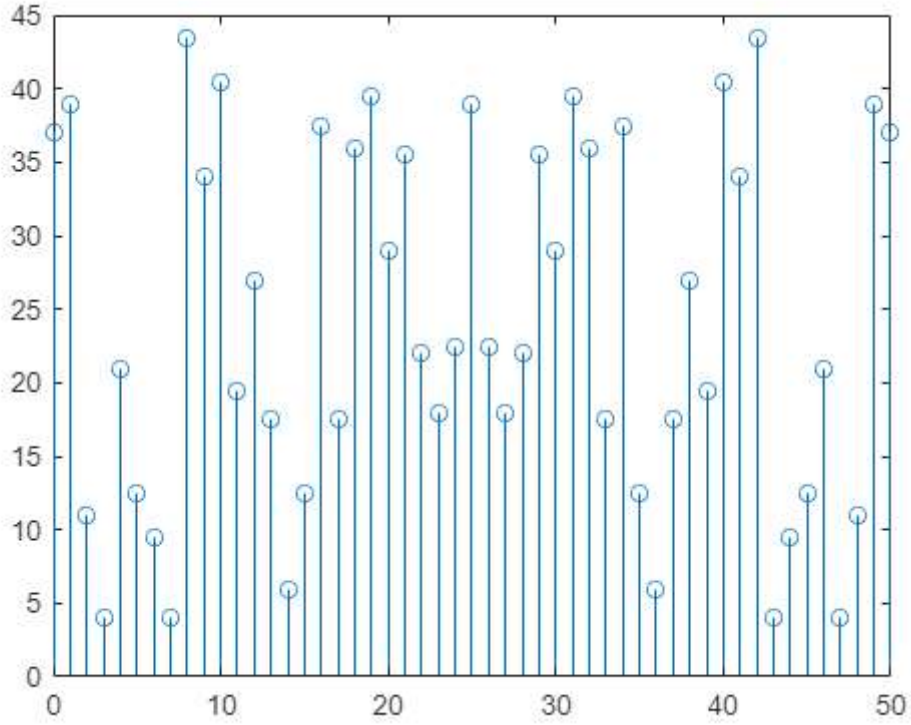


9) cos^2(pi/5*n) This graph shows what happens when you square a cosine wave



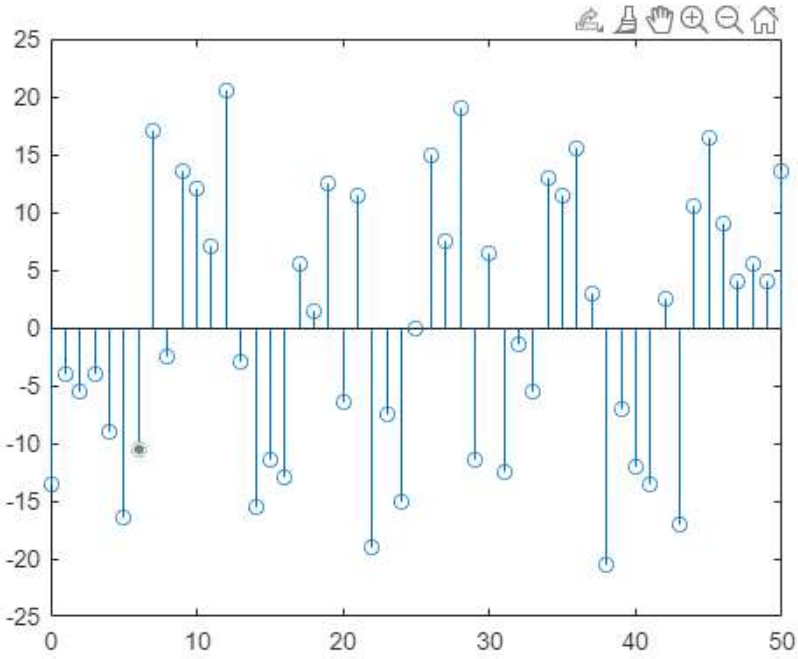
Part 2:

1) (x[n] + x[-n+50])/2



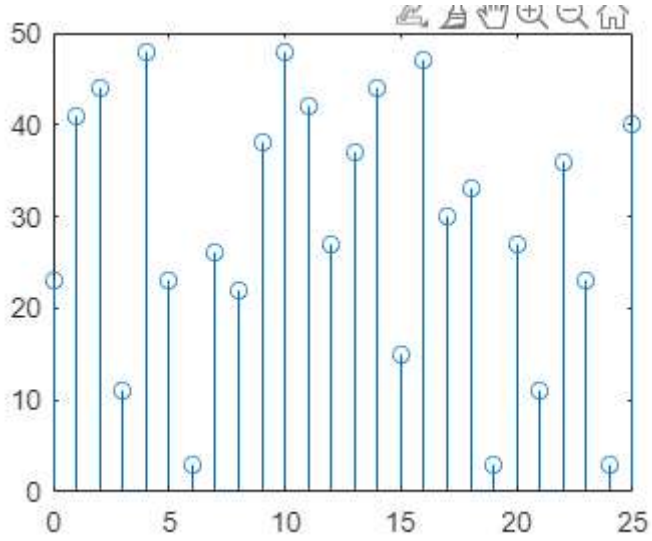

```
x= randi(50,1,51);
n1 = 0:1:50;
x1 = fliplr(x);
xe = (x*2);
stem(n1,xe);
```

Xo[n] = (x[n] - x[-n+50])/2



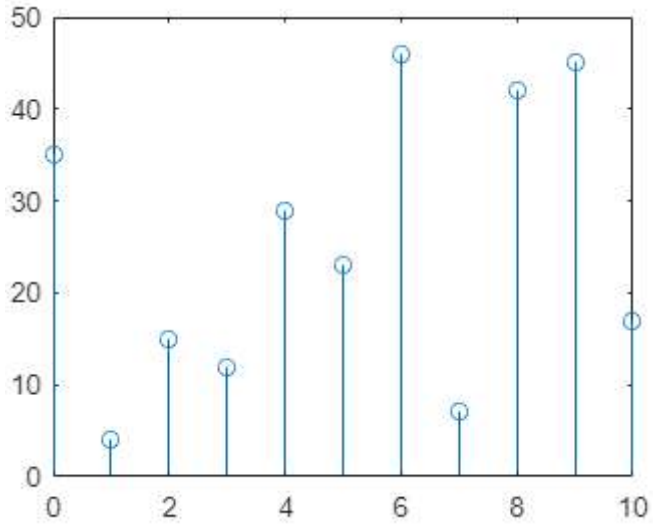

```
x0 = (x-x1)/2;
stem(n,x0);
```

2) X[2n] this shows every other element



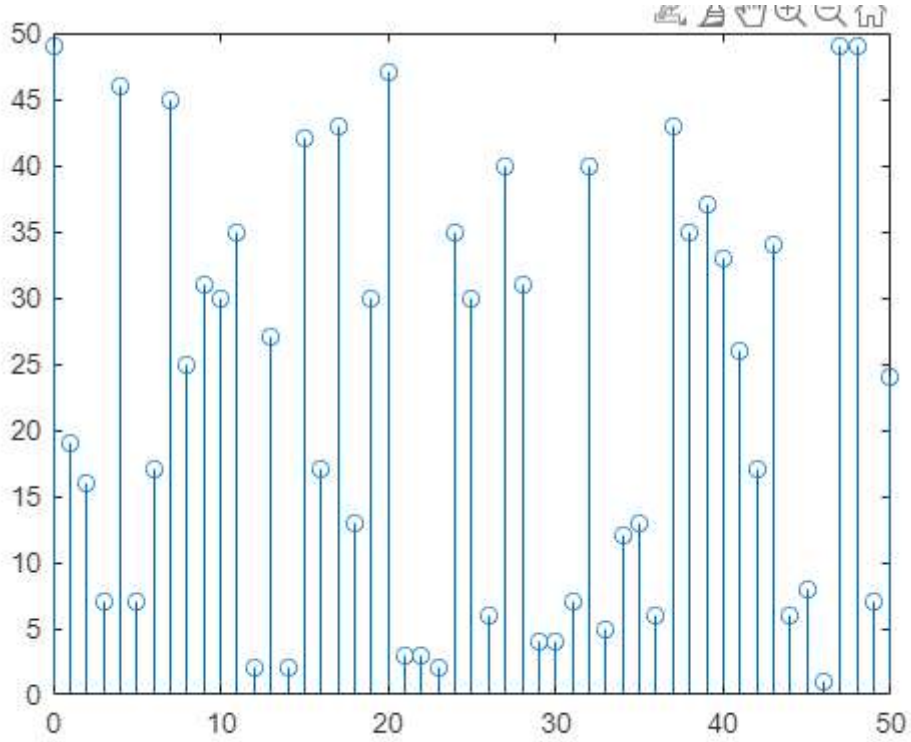

```
%stem(n,xe);
n2 = 0:1:25;
x2n = x(2*n2+1);
stem(n2,x2n);
```

3) X[5n] this shows every 5 elements




```
%stem(n,xe);
n2 = 0:1:10;
x2n = x(5*n2+1);
stem(n2,x2n);
```

4)



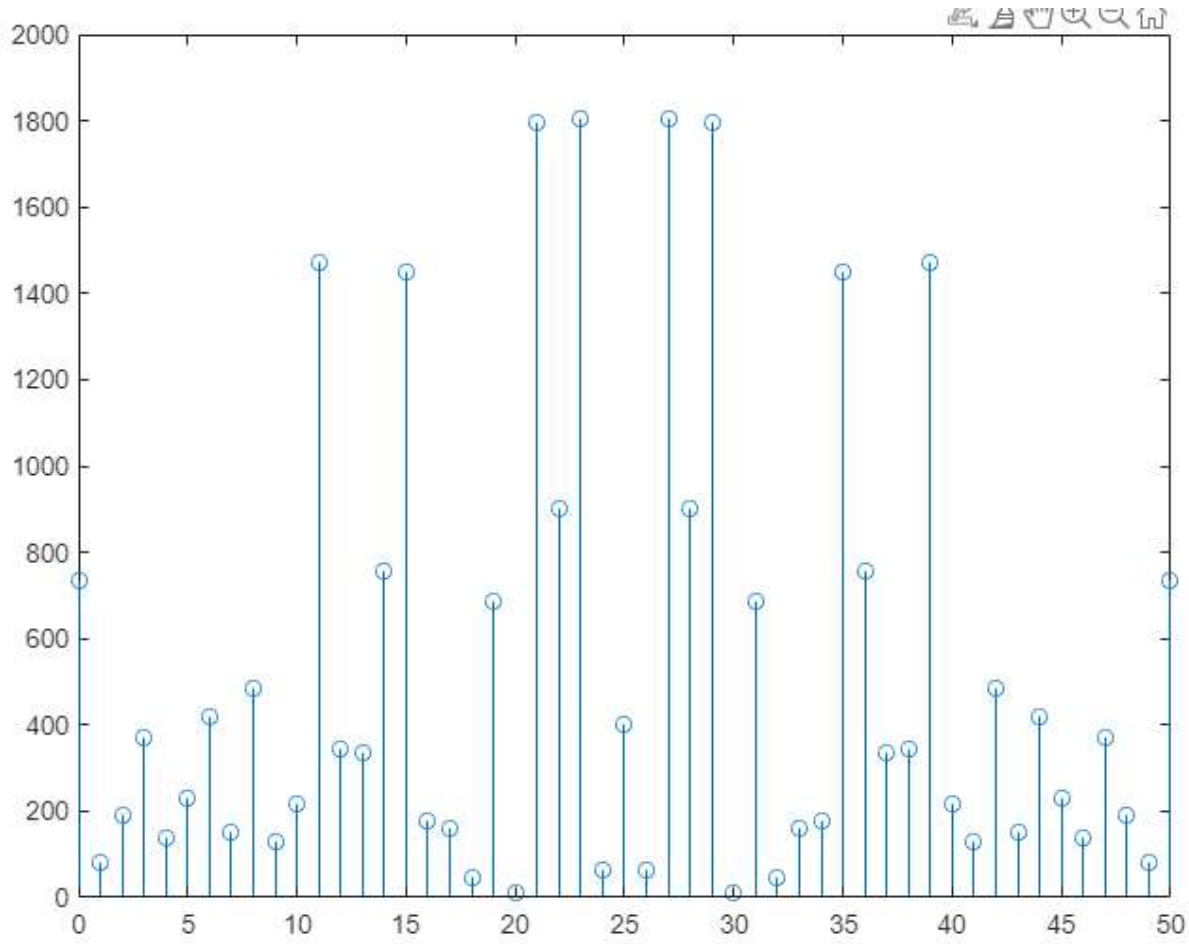

```
n1 = 0:1:50;

x2n = x(5*n2+1);

xsum =0;
for m = 0:1:4
    tempx = x((n+1)-m);
    xsum = xsum + tempx;
end
stem(n1,x);
```

This graph skips the first four elements then it goes through the array and makes the last 4 elements the first ones

5)




```
x= randi(50,1,51);
nx = fliplr(x);
n1 = 0:1:50;
xp = x.*nx;
stem(n1,xp);
```

This shows an array that has been multiplied by reverse of itself