1.a)
3x1 = 21 – 5x2 ise x1 = 7 – (5 / 3)x2
x3 = 2x2 – 7

ikinci denklemi x2 cinsinden yazarsak: 14 – (10 / 3)x2 – x2 + 4x2 -14 = -1 ise x2 = 3
bririnci denklemde yerine koyarsak: 3x1 + 15 = 21 ise x1 = 2
x2'yi üçüncü denklemde yerine koyarsak: 6 – x3 = 7 isex3 = -1

1.b)

```
octave:8> A=[3 5 0;2 -1 2;0 2 -1];
octave:9> B=[21;-1;7];
octave:10> sonuc=linsolve(A,B)
sonuc =

   2.0000
   3.0000
  -1.0000
```

2)

```
octave:69> A = [1 0 0 1 1 1 0;0 1 0 1 1 1 0;0 0 1 1 1 1 0;0 0 1 1 1 1 0;0
0 1 1 1 0 1]
A =

   1   0   0   1   1   1   0
   0   1   0   1   1   1   0
   0   0   1   1   1   1   0
   0   0   1   1   1   1   0
   0   0   1   1   1   0   1

octave:70> B = [A(1,:);A(3,:);A(5,:)]
B =

   1   0   0   1   1   1   0
   0   0   1   1   1   1   0
   0   0   1   1   1   0   1
```
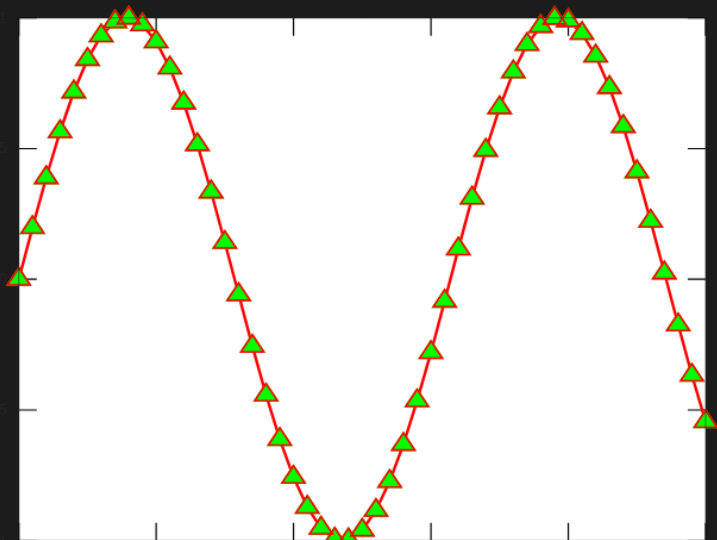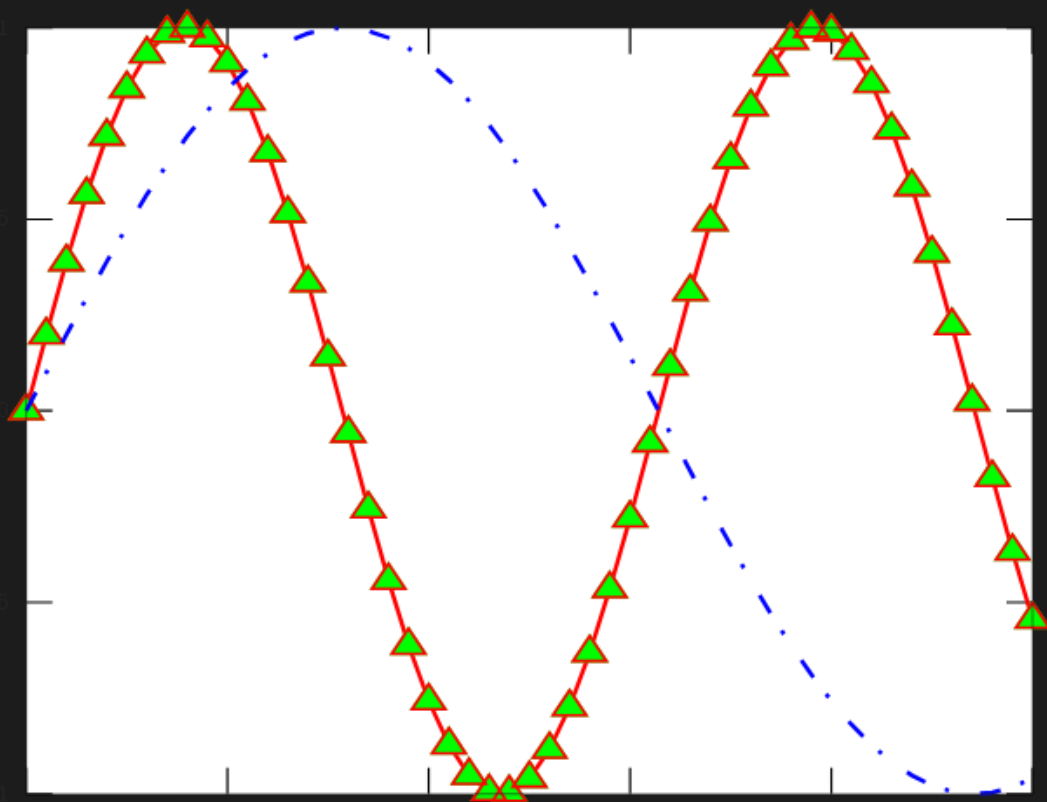
3)

```
octave:46> x = 0: 0.2 : 10;
octave:47> y1 = sin(x);
octave:48> y2 = sin(x/2);
octave:49> y3 = sin(2 * x);
```
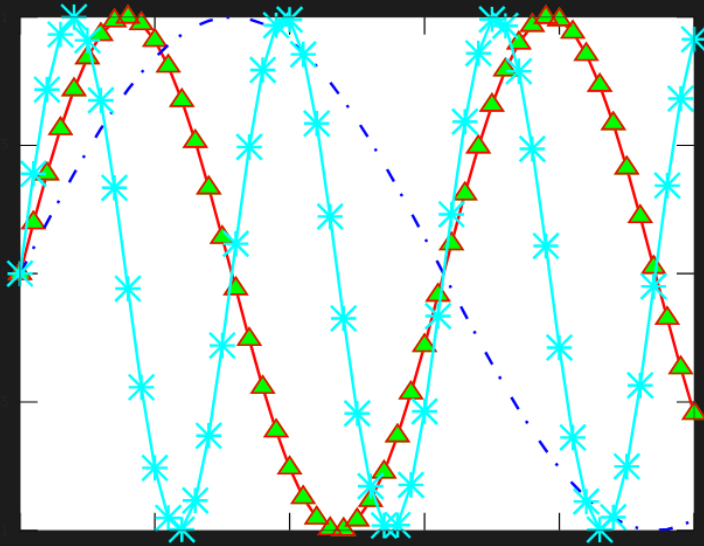
octave:51> plot(x, y1, 'LineWidth', 2, 'Color', 'r', 'Marker', '^', 'MarkerFaceColor', 'g', 'MarkerSize', 4)

octave:53> plot(x, y2, 'LineWidth', 2, 'Color', 'b', 'LineStyle', '-.')

```
octave:54> hold on
octave:55> plot(x, y3, 'LineWidth', 2, 'Color', 'cyan', 'Marker', '*', 'MarkerFaceColor', 'g', 'MarkerSize', 6)
```


kırmızı çizgili y1, mavi çizgili y2 ve camgöbeği olan da y3'tür.

4)

```
octave:61> x = [-5 -4 -2 1 3 4 7 9 12 15];
octave:62> y = [3 6 7 3 -1 -4 -2 1 6 10]
```

```
octave:68> size(x)
ans =

    1   10

octave:69> i = 1:10;
octave:70> p1 = polyfit(x, y, 1)
p1 =

   0.078049   2.587805

octave:71> p2 = polyfit(x, y, 2)
p2 =

   0.091010  -0.763236   0.765390

octave:72> p3 = polyfit(x, y, 3)
p3 =

   6.5086e-03  -4.3854e-03  -7.9068e-01   2.3620e+00
```

```
octave:73> y1 = 0.078049 * x(i) + 2.587805;
octave:74> y2 = 0.091010 * x(i).^2 + -0.763236 * x(i) + 0.765390
y2 =

 Columns 1 through 7:

   6.856820    5.274494    2.655902    0.093164   -0.705228   -0.831394   -0.117772

 Columns 8 through 10:

   1.268076    4.711998    9.794100

octave:75> y3 = 6.5086e-03 * x(i).^3 - 4.3854e-03 * x(i).^2 - 7.9068e-01 * x(i) + 2.3620e+00;
```
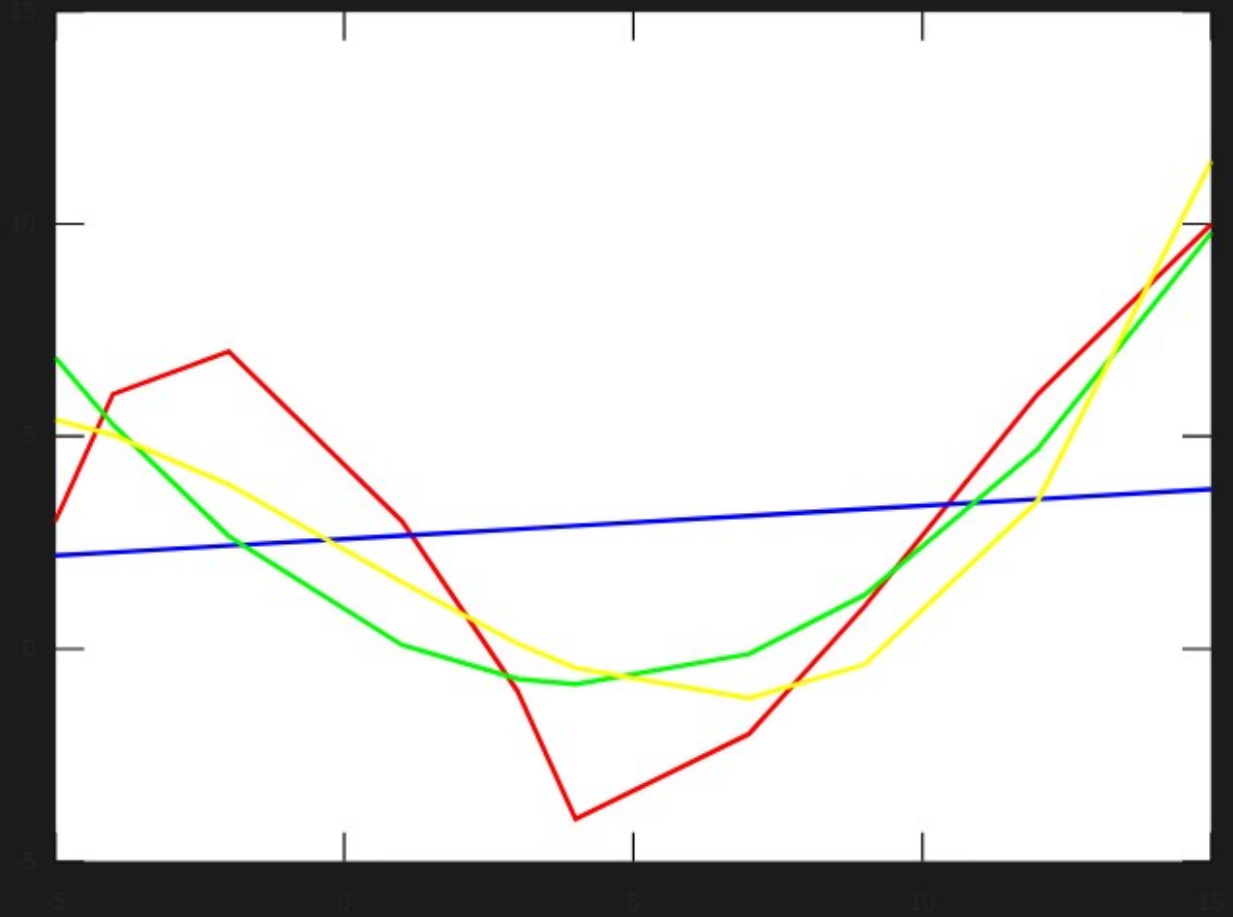
```
octave:86> plot(x, y, 'Color', 'red', 'LineWidth', 2)
```

```
octave:0> hold on
```

```
octave:88> plot(x, y1, 'Color', 'blue', 'LineWidth', 2)
```

```
octave:89> plot(x, y2, 'Color', 'green', 'LineWidth', 2)
```

```
octave:90> plot(x, y3, 'Color', 'yellow', 'LineWidth', 2)
```


Aşağıda her doğru uydurma işlemi için hatalar toplamı bulunmuştur.

```
octave:97> sum(abs(y - y1))
ans = 36.293
octave:98> sum(abs(y - y2))
ans = 18.941
octave:99> sum(abs(y - y3))
ans = 18.781
```

Bu hesaplamalar sonucunda içlerindeki en ideal doğru üçüncü dereceden olandır.

5)

```matlab
function [ ] = my_script( x )
for i = 1:x
    fprintf('\n');
    for j = 1:i
        fprintf('*');
    end
end
for k = x:-1:1
    for l = k:-1:1
        fprintf('*');
    end
    fprintf('\n');
    for m = x:2*x+x-k
        printf(' ');
    end
end
fprintf('\n');
```

```
octave:46> my_script(5)

*
**
***
****
**********
         ****
        ***
       **
      *
```

6)

```
1   function num = my_script(n)
2
3   for i=2:n
4       fac_sum = 0;
5       j = 1;
6       while j <= i-1
7           if rem(i,j) == 0
8               fac_sum = fac_sum + j;
9           end
10          j = j +1;
11      end
12      if i == fac_sum
13          disp(i);
14      end
15  end
```

.

```
octave:59> my_script(496)
6
28
496
```

7)

```
octave:74> int(3 * x^2 + 6 * x - 8)
ans = (sym)

   3       2
  x   + 3·x   - 8·x
```

```
octave:0> integral2(@(x, y) 9 * x^3 * y^2, 2, 4,
1, 3)
ans = 2.4520e+08
```

```
octave:76> integral2(@(x, y) sin(x) + cos(y), pi,
2* pi, -pi, pi)
ans = -12.566
```

```
octave:79> diff(x^3 - 2*x^6 - ((6 + x^2)/(5*x)))
ans = (sym)
```

$$- 12 \cdot x^5 + 3 \cdot x^2 - \frac{2}{5} + \frac{x^2 + 6}{5 \cdot x^2}$$

```
octave:83> diff(y ^ 6 - 2 * y^4, 2)
ans = (sym)
```

$$6 \cdot y^2 \cdot \left(5 \cdot y^2 - 4\right)$$