Contents

Exercici 12 - mínims quadrats

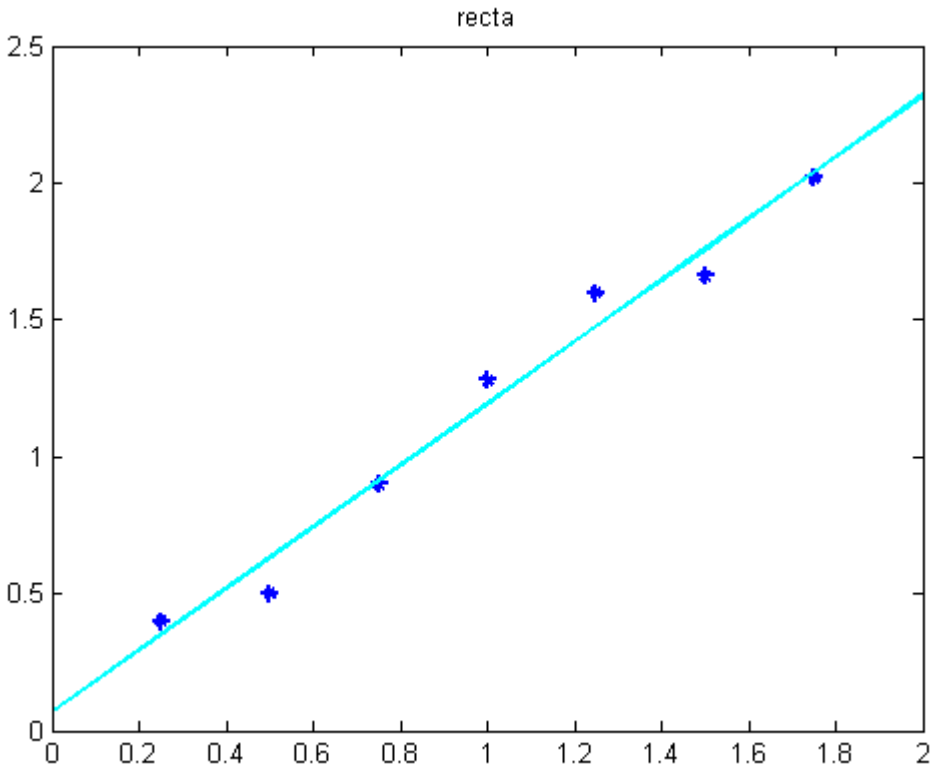
```
clc
disp('dades')
X=[0.25 0.50 0.75 1.00 1.25 1.50 1.75];
Y=[0.40 0.50 0.90 1.28 1.60 1.66 2.02];
TAULA=[X;Y]'
```

```
dades
TAULA =
         0.25          0.4
          0.5          0.5
         0.75          0.9
            1         1.28
         1.25          1.6
          1.5         1.66
         1.75         2.02
```

ajust per recta

```
disp('recta')
A=[ones(size(X)); X]'
b=Y';
solr=A\b
Z=0:0.25:2;
recta = solr(1)+solr(2)*Z;
plot(X,Y,'*',Z,recta,'cyan','LineWidth',2),title('recta')
e=Y-(solr(1)+solr(2)*X);
rrecta=norm(e)
```

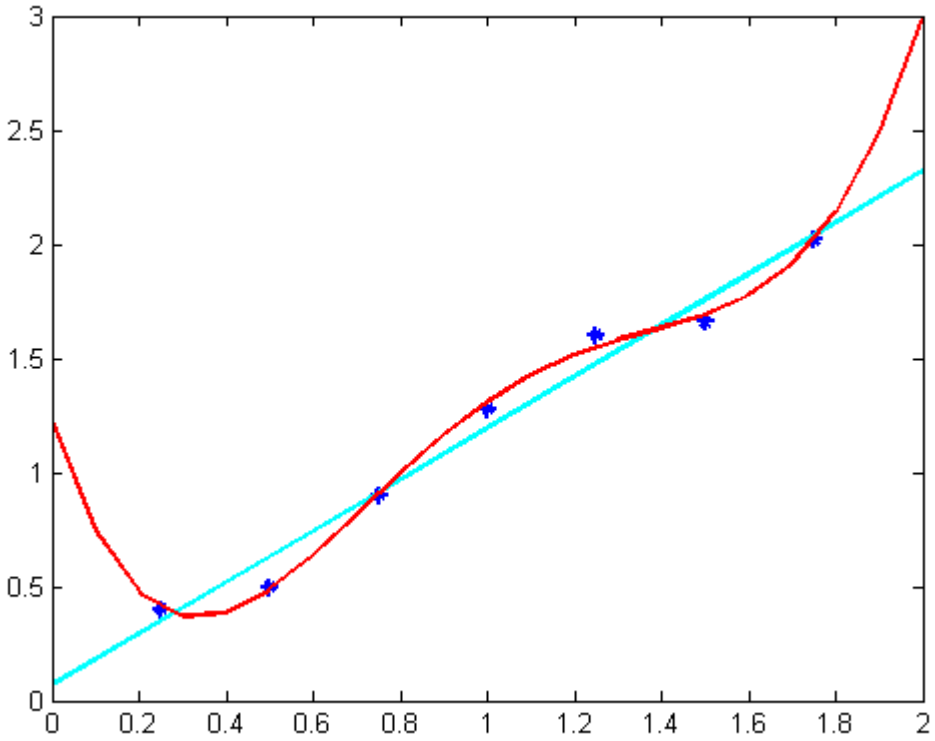
```
recta
A =
            1         0.25
            1          0.5
            1         0.75
            1            1
            1         1.25
            1          1.5
            1         1.75
solr =
     0.068571
       1.1257
rrecta =
      0.22916
```



ajust per polinomi de grau 4

```
disp('polinomi')
A=vander(X); A(:,1:2)=[]
b=Y';
[Q,R]=qr(A);
b1=Q'*b;
coef_pol=R\b1
ZZ=0:0.1:2;
pol=polyval(coef_pol,ZZ);
e = Y-polyval(coef_pol,X);rpol=norm(e)
plot(X,Y,'*',Z,recta,'cyan',ZZ,pol,'r','LineWidth',2)
```

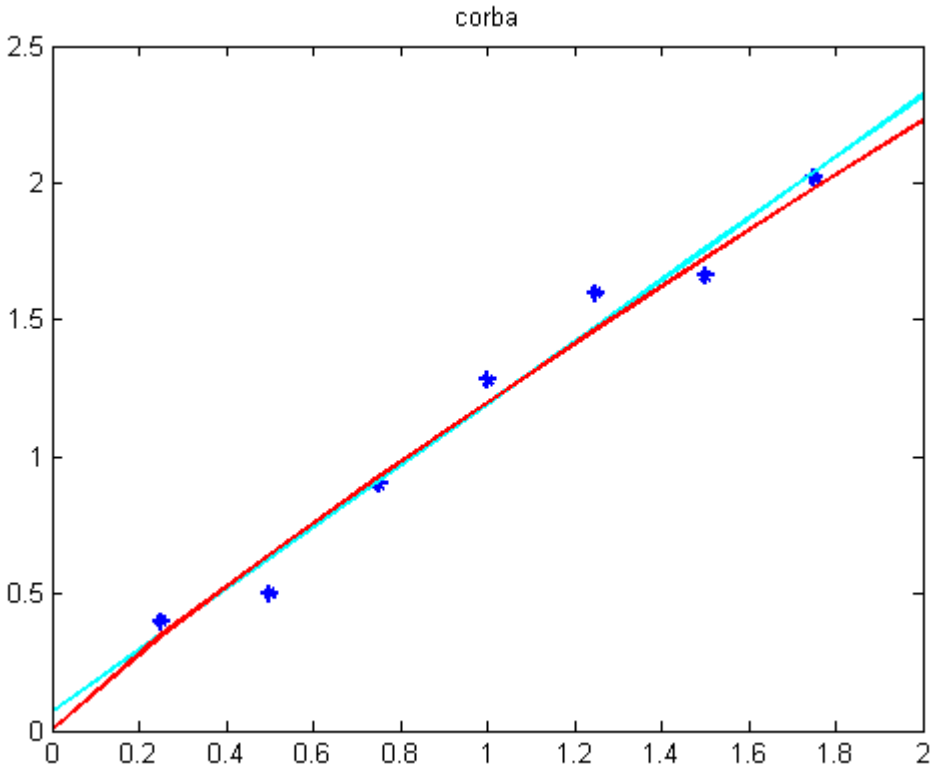
```
polinomi
A =
    0.0039063     0.015625       0.0625         0.25            1
       0.0625        0.125         0.25          0.5            1
      0.31641      0.42188       0.5625         0.75            1
            1            1            1            1            1
       2.4414       1.9531       1.5625         1.25            1
       5.0625        3.375         2.25          1.5            1
       9.3789       5.3594       3.0625         1.75            1
coef_pol =
       2.2497
      -9.4255
       13.333
      -6.0767
       1.2286
rpol =
     0.068881
```



ajust per potencial

```
disp('recta')
A=[ones(size(X)); log(X)]'
b=log(Y)';
[Q,R]=qr(A);
b1=Q'*b;
p=R\b1
Z=0:0.25:2;
corba = exp(p(1)).*Z.^p(2);
e=Y-(exp(p(1)).*X.^p(2));
rcorba=norm(e)
plot(X,Y,'*',Z,recta,'cyan',Z,corba,'r','LineWidth',2),title('corba')
```

```
recta
A =
            1      -1.3863
            1     -0.69315
            1     -0.28768
            1            0
            1      0.22314
            1      0.40547
            1      0.55962
p =
      0.18114
      0.89577
rcorba =
      0.23515
```



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