Regression samples

You should always check the data you're working with! In the following samples, we have 4 datasets, and a single line was fitted on each. If you don't have any prior information of the dataset, check it at least visually, because an automatic analysis could easily go off:

```
clear all; clc; close all
data=load('regress_data.txt')
```

```
data =
   10.0000    8.0400   10.0000    9.1400   10.0000    7.4600    8.0000    6.5800
    8.0000    6.9500    8.0000    8.1400    8.0000    6.7700    8.0000    5.7600
   13.0000    7.5800   13.0000    8.7400   13.0000   12.7400    8.0000    7.7100
    9.0000    8.8100    9.0000    8.7700    9.0000    7.1100    8.0000    8.8400
   11.0000    8.3300   11.0000    9.2600   11.0000    7.8100    8.0000    8.4700
   14.0000    9.9600   14.0000    8.1000   14.0000    8.8400    8.0000    7.0400
    6.0000    7.2400    6.0000    6.1300    6.0000    6.0800    8.0000    5.2500
    4.0000    4.2600    4.0000    3.1000    4.0000    5.3900   19.0000   12.5000
   12.0000   10.8400   12.0000    9.1300   12.0000    8.1500    8.0000    5.5600
    7.0000    4.8200    7.0000    7.2600    7.0000    6.4200    8.0000    7.9100
```

```
%
```

In this dataset, 4 connected datapair is presented:

```
x1= data(:,1); y1= data(:,2);
x2= data(:,3); y2= data(:,4);
x3= data(:,5); y3= data(:,6);
x4= data(:,7); y4= data(:,8);

% Linear regression, the fitted lines:
p1 = polyfit(x1,y1,1)
```

```
p1 =
    0.5001    3.0001
```

```
p2 = polyfit(x2,y2,1)
```

```
p2 =
    0.5000    3.0009
```

```
p3 = polyfit(x3,y3,1)
```

```
p3 =
    0.4997    3.0025
```

```
p4 = polyfit(x4,y4,1)
```

```
p4 =
    0.4999    3.0017
```

```
L = [0, 20]'
```

```
L =
     0
    20
```

```
Ly = p1(1)*L+p1(2)
```

```
Ly =
    3.0001
   13.0019
```

```
% Checking the residuals:
r1 = sum((y1-p1(1).*x1-p1(2)).^2)
```

```
r1 = 13.7627
```

```
r2 = sum((y2-p2(1).*x2-p2(2)).^2)
```

```
r2 = 13.7763
```

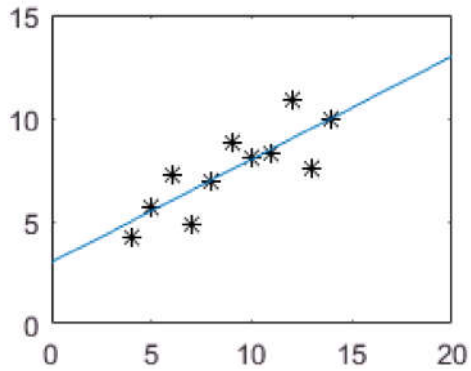
```
r3 = sum((y3-p3(1).*x3-p3(2)).^2)
```

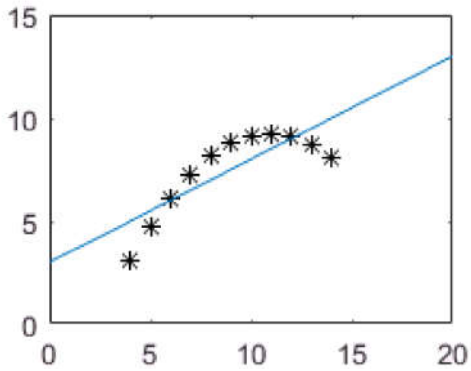
```
r3 = 13.7562
```

```
r4 = sum((y4-p4(1).*x4-p4(2)).^2)
```

```
r4 = 13.7425
```

```
% Plotting
figure;
subplot(2,2,1)
plot(x1,y1,'k*')
hold on
plot(L,Ly)
xlim([0,20])
subplot(2,2,2)
plot(x2,y2,'k*')
hold on
plot(L,Ly)
xlim([0,20])
subplot(2,2,3)
plot(x3,y3,'k*')
hold on
plot(L,Ly)
xlim([0,20])
subplot(2,2,4)
plot(x4,y4,'k*')
hold on
plot(L,Ly)
xlim([0,20])
```


15
10
5
0
0
5
10
15
20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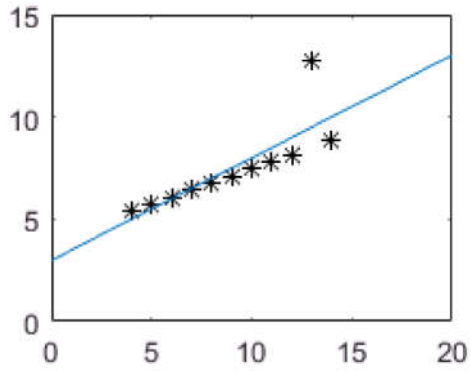
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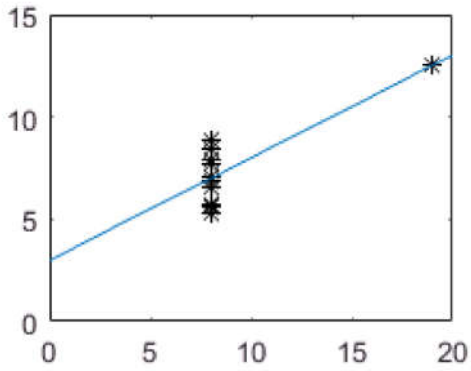
15
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