

erregresioa.wxm

```
--> load ("lsquares");
```

```
--> load("descriptive");
```

□ Erregresioa

□ **1 Karratu minimoen metodoa**

□ karratu minimoen metodoaren bidez $\{(x_i, y_i) \mid i=1..n\}$ puntuak doitzeko "lsquares_estimate(datuen_matrizea, aldagaien_zerrenda, doiketa_kurba_adieraz parametroen zerrenda)" agindua erabiliko dugu

```
--> DM:matrix([310,9.50],  
             [400,12.00],  
             [420,14.50],  
             [300,9.50],  
             [170,5.80],  
             [610,20.00],  
             [280,8.50],  
             [430,11.00],  
             [420,12.40],  
             [310,10.30],  
             [230,7.20],  
             [450,13.70]);
```

□ Datuen adierapen grafikoa lortzeko

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```
--> D: [[310,9.50],  
        [400,12.00],  
        [420,14.50],  
        [300,9.50],  
        [170,5.80],  
        [610,20.00],  
        [280,8.50],  
        [430,11.00],  
        [420,12.40],  
        [310,10.30],  
        [230,7.20],  
        [450,13.70]];  
  
--> wxplot2d([discrete,D],[x,150,650],[y,0,25],[style,points]);  
  
--> lsquares_estimates (DM, [x,y], y = A*x+B, [A,B]);  
  
--> %,numer;
```

□ **2 korrelazio koefizientea**

```
--> cor (DM)[1,2],numer;  
  
--> cov(DM);
```

□ **3 Linealak ez diren doiketak**

☑ Lineala ez den adibide bat

```
--> DM2 : matrix ([1, 1], [2, 7/4], [3, 11/4], [4, 13/4]);
```

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[-> wxplot2d([discrete,[[1, 1], [2, 7/4], [3, 11/4], [4, 13/4]]],[x,0,5],[y,

[-> Adierazpen grafikoa berriro egingo dugu, baina ardatzetan eskala logaritmikoa

[-> wxplot2d([discrete,[[1, 1], [2, 7/4], [3, 11/4], [4, 13/4]]],[x,1,5],[y,

[-> $y=a*x^b$ doiketa

[-> lsquares_estimates (DM2, [x,y], $y=a2*x^b2$, [a2,b2]);

[-> Lineala ez den beste adibide bat

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```
--> DM3:matrix([24.7, 484],  
[39.4, 1210],  
[53.4 , 1880],  
[24.8,427],  
[39.9 , 989],  
[56.0 , 1980],  
[27.3 , 413],  
[40.3 , 1160],  
[56.5,1820],  
[28.4, 517],  
[40.6, 1010],  
[57.3, 2020],  
[28.4, 549],  
[40.7, 1100],  
[57.6, 1980],  
[29.0, 648],  
[40.7, 1130],  
[59.2, 2310],  
[30.3, 587],  
[42.9, 1270],  
[59.8, 1940],  
[32.7, 704],  
[45.8, 1180],  
[66.0, 3260],  
[35.6, 979],  
[46.9, 1400],  
[67.4, 2700],  
[38.5, 914],  
[48.2, 1760],  
[68.8, 2890],  
[38.8, 1070],  
[51.5, 1710],  
[69.1, 2740],  
[39.3, 1020],  
[51.5, 2010],  
[69.1, 3140]);
```

```
--> D3:[[24.7, 484],  
      [39.4, 1210],  
      [53.4 , 1880],  
      [24.8,427],  
      [39.9 , 989],  
      [56.0 , 1980],  
      [27.3 , 413],  
      [40.3 , 1160],  
      [56.5,1820],  
      [28.4, 517],  
      [40.6, 1010],  
      [57.3, 2020],  
      [28.4, 549],  
      [40.7, 1100],  
      [57.6, 1980],  
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      [40.7, 1130],  
      [59.2, 2310],  
      [30.3, 587],  
      [42.9 , 1270],  
      [59.8, 1940],  
      [32.7, 704],  
      [45.8, 1180],  
      [66.0, 3260],  
      [35.6, 979],  
      [46.9, 1400],  
      [67.4, 2700],  
      [38.5, 914],  
      [48.2, 1760],  
      [68.8, 2890],  
      [38.8, 1070],  
      [51.5, 1710],  
      [69.1, 2740],  
      [39.3, 1020],  
      [51.5, 2010],  
      [69.1, 3140]];
```

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```
[-> wxplot2d([discrete,D3],[x,20,100],[y,500,3200],[style,points]);
```

[-> Adierazpen grafikoa berriro egingo dugu, baina ardatzetan eskala logaritmikoa

```
[-> wxplot2d([discrete,D3],[x,20,100],[y,500,3200],[style,points],[logy],[l
```

[-> $y=a*x^b$ doiketa

```
[-> lsquares_estimates (DM3, [x,y], y=a3*x^b3, [a3,b3] );
```

[-> Adierazpen grafikoa berriro egingo dugu, baina 0Y ardatzean eskala logaritmikoa

```
[-> wxplot2d([discrete,D3],[x,20,100],[y,500,3200],[style,points],[logy]);
```

[-> $y=a*b^x$ doiketa

```
[-> lsquares_estimates (DM3, [x,y], y=a4*b4**x, [a4,b4] );
```