

هاده برزش

شده داده توابع خطي تركيب **data** هاي داده به : **Fit**[*data*, *funcs*, *vars*]
. ميشود معرفي **vars** با متغير. برزدمي مربعات كمترين روش بار **funcs** در

```

ra := RandomReal[{-0.5, 0.5}]
data = Table[{i, 2.7 + i 4.6 + ra}, {i, .4, 8, .6}]
datax = Table[data[[i, 1]], {i, Length[data]}]
datay = Table[data[[i, 2]], {i, Length[data]}]
dataxy = Table[data[[i, 1]] data[[i, 2]], {i, Length[data]}];
b = (Mean[dataxy] - Mean[datax] Mean[datay]) / (Mean[datax^2] - Mean[datax]^2) // N
a = Mean[datay] - b Mean[datax]

{{0.4, 4.76484}, {1., 7.1062}, {1.6, 9.71109}, {2.2, 13.2364},
 {2.8, 15.2364}, {3.4, 18.5297}, {4., 20.8621}, {4.6, 23.4395}, {5.2, 26.4908},
 {5.8, 29.1862}, {6.4, 32.5098}, {7., 34.9397}, {7.6, 37.2389}}

{0.4, 1., 1.6, 2.2, 2.8, 3.4, 4., 4.6, 5.2, 5.8, 6.4, 7., 7.6}

{4.76484, 7.1062, 9.71109, 13.2364, 15.2364, 18.5297,
 20.8621, 23.4395, 26.4908, 29.1862, 32.5098, 34.9397, 37.2389}

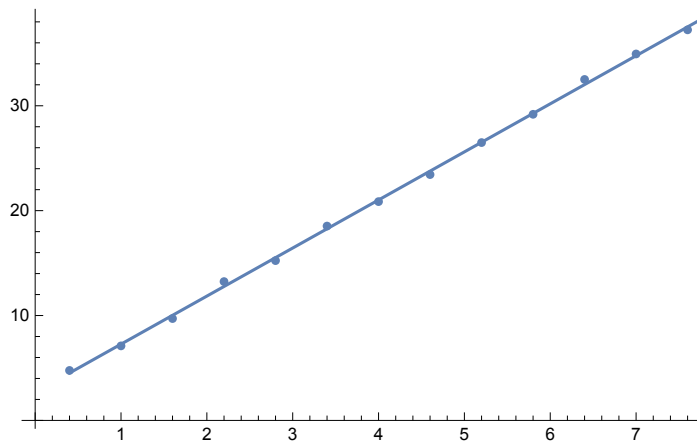
4.5831

2.68695

line = Fit[data, {1, x}, x]
Show[ListPlot[data], Plot[{line}, {x, 0.4, 8}]]

2.68695 + 4.5831 x

```



```
data = {{0, 1}, {1, 0}, {3, 2}, {5, 4}};
```

```
line = Fit[data, {1, x}, x]
```

```
0.186441 + 0.694915 x
```

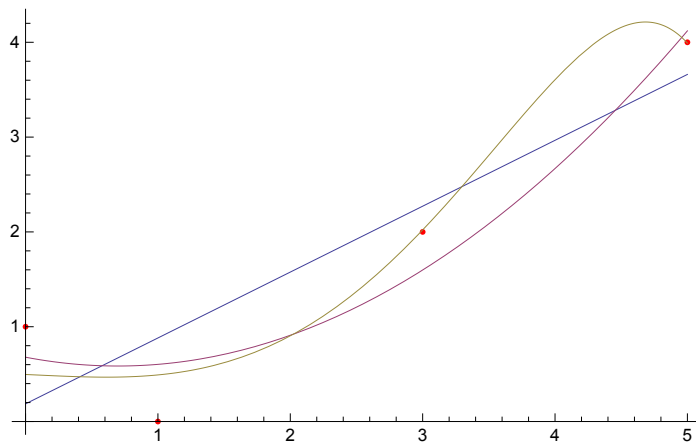
```
parabola = Fit[data, {1, x, x^2}, x]
```

```
0.678392 - 0.266332 x + 0.190955 x^2
```

```
ec = Fit[data, {1, Exp[x], x^3}, x]
```

```
0.55644 - 0.0603372 e^x + 0.0991198 x^3
```

```
Show[ListPlot[data, PlotStyle -> Red], Plot[{line, parabola, ec}, {x, 0, 5}]]
```

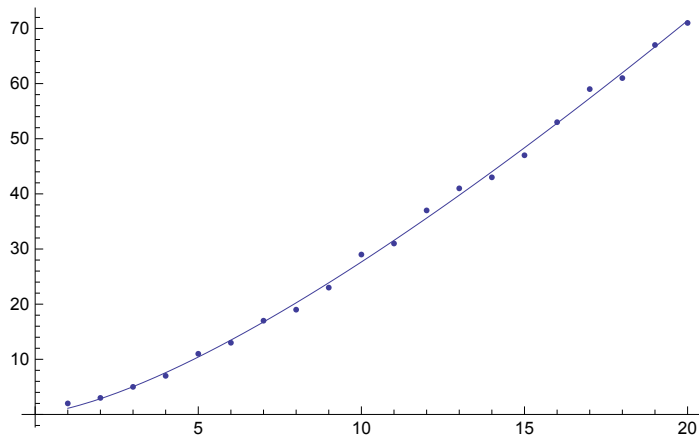



```
data2 = {{1, 2}, {2, 3}, {3, 5}, {4, 7}, {5, 11}, {6, 13},  
        {7, 17}, {8, 19}, {9, 23}, {10, 29}, {11, 31}, {12, 37}, {13, 41},  
        {14, 43}, {15, 47}, {16, 53}, {17, 59}, {18, 61}, {19, 67}, {20, 71}};
```

```
fit = FindFit[data2, A x Log[B + C x], {A, B, C}, x]
```

```
{A → 1.42076, B → 1.65558, C → 0.534645}
```

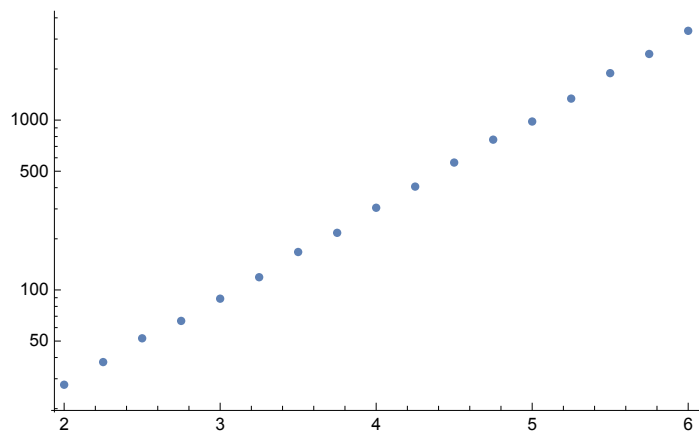
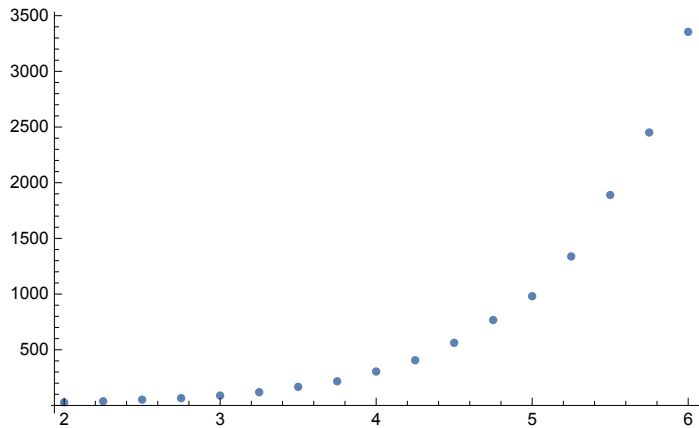
```
Show[ListPlot[data2], Plot[A x Log[B + C x] /. fit, {x, 1, 20}]]
```



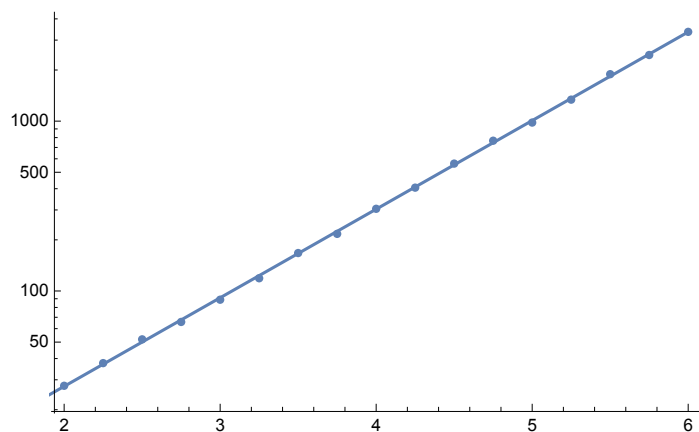
```

ra := RandomReal[{-0.1, 0.1}]
data = Table[{i, (2.5 + ra) Exp[1.2 i]}, {i, 2, 6, .25}]
ListPlot[data, PlotRange -> All]
ListLogPlot[data]
fit = FindFit[data, a Exp[b x], {a, b}, x]
Show[ListLogPlot[data], LogPlot[a Exp[b x] /. fit, {x, 1, 6}]]
{{2., 27.6608}, {2.25, 37.6077}, {2.5, 51.9036}, {2.75, 65.7172},
 {3., 88.8352}, {3.25, 118.825}, {3.5, 167.251}, {3.75, 216.923},
 {4., 304.702}, {4.25, 405.899}, {4.5, 562.326}, {4.75, 766.987}, {5., 980.821},
 {5.25, 1338.26}, {5.5, 1889.71}, {5.75, 2451.41}, {6., 3354.65}}

```



```
{a -> 2.48381, b -> 1.20114}
```



است ممکن متغیر یک از بیش به تعمیم

```
data3 =
  Flatten[Table[{x, y, Sin[x] + Sin[y] + 0.1 x}, {x, 1, 10, 0.2}, {y, 1, 10, 0.2}], 1];
sinsin = FindFit[data3, a + Sin[b x] + Sin[c y], {a, b, c}, {x, y}]
{a -> 0.537077, b -> 0.984994, c -> 1.}

Show[ListPointPlot3D[data3],
  Plot3D[a + Sin[b x] + Sin[c y] /. sinsin, {x, 1, 10}, {y, 1, 10}]]
```

