

## Lineare Regression

Dokumentnummer: DX1069

Fachgebiet: Trendlinie

Datenanalyse

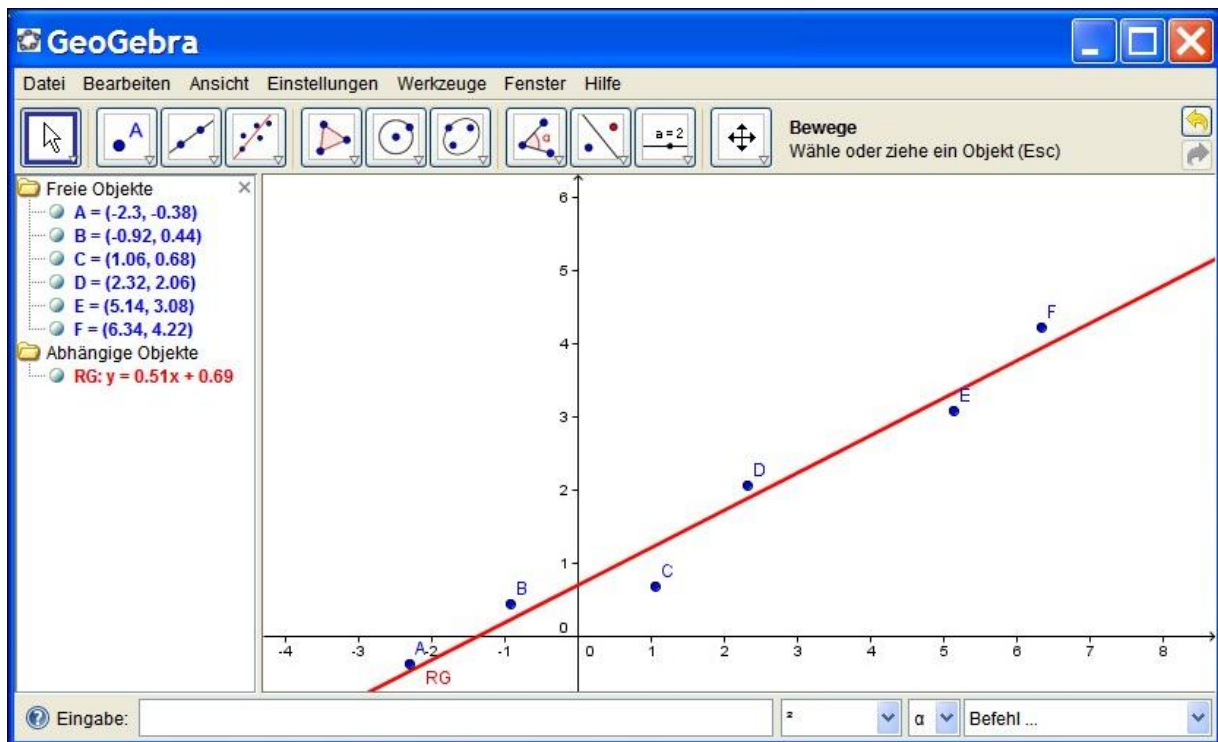
Geradengleichung

Extremwertaufgaben (warum?)

## Problembeschreibung

MIT DER NEUESTEN GEOGEBRA-VERSION KANN MAN LEICHT  
EINE REGRESSIONSGERADE ERMITTELN.

Die Kontrolle soll mit Maxima erfolgen.



## Problemlösung

```
>> kill(all);  
(%o0) done
```

# Lineare Regression

## EINGABEDATEN

```
>> X:[-2.3,-0.92,1.06,2.32,5.14,6.34];Y:[-0.38,0.44,0.68,2.06,3.08,4.22];
```

```
(%o1) [ - 2.3 , - 0.92 , 1.06 , 2.32 , 5.14 , 6.34 ]
```

```
(%o2) [ - 0.38 , 0.44 , 0.68 , 2.06 , 3.08 , 4.22 ]
```

```
>> n:length(X);
```

```
(%o3) 6
```

## REGRESSIONSGLEICHUNGEN

```
>> g1:a*sum(X[i]**2,i,1,n)+b*sum(X[i],i,1,n)=sum(X[i]*Y[i],i,1,n);
```

```
(%o4) 11.64 b + 79.2576 a = 48.5552
```

```
>> g2:a*sum(X[i],i,1,n)+b*n=sum(Y[i],i,1,n);
```

```
(%o5) 6 b + 11.64 a = 10.1
```

## GLEICHUNGEN LÖSEN

```
>> l:solve([g1,g2],[a,b]),numer;
```

```
rat: replaced -48.5552 by -30347/625 = -48.5552
```

```
rat: replaced 79.2576 by 49536/625 = 79.2576
```

```
rat: replaced 11.64 by 291/25 = 11.64
```

```
rat: replaced -10.1 by -101/10 = -10.1
```

```
rat: replaced 11.64 by 291/25 = 11.64
```

```
(%o6) [ [ a = 0.51099583597996 , b = 0.69200141153222 ] ]
```

## RUNDUNG

```
>> a:ev(a,l[1][1]);a:floor(a*100+0.5)/100.0;
```

```
(%o7) 0.51099583597996
```

```
(%o8) 0.51
```

```
>> b:ev(b,l[1][2]);b:floor(b*100+0.5)/100.0;
```

```
(%o9) 0.69200141153222
```

```
(%o10) 0.69
```

# Lineare Regression

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## AUSGABE

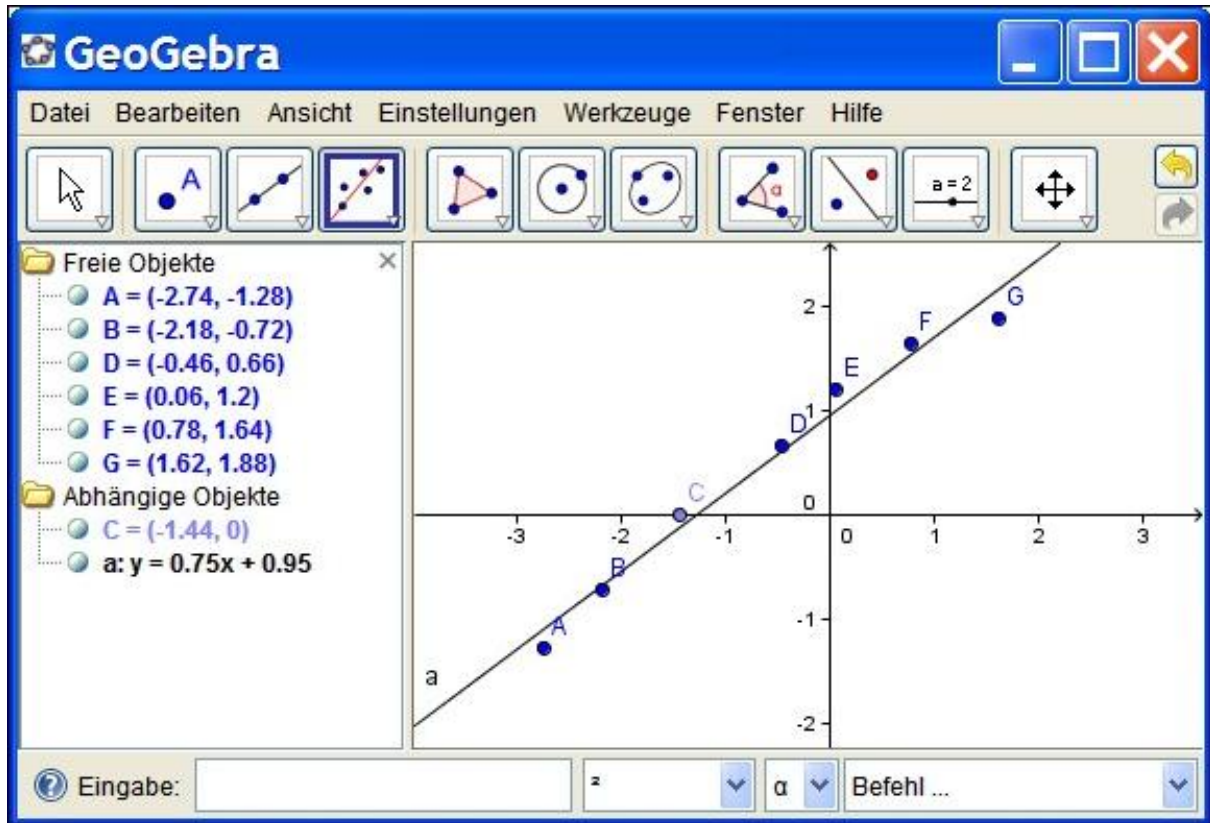
>> Regressionsgerade:  $y = a \cdot x + b$ ;

(%o11)  $y = 0.51 x + 0.69$

## Weitere Übungen

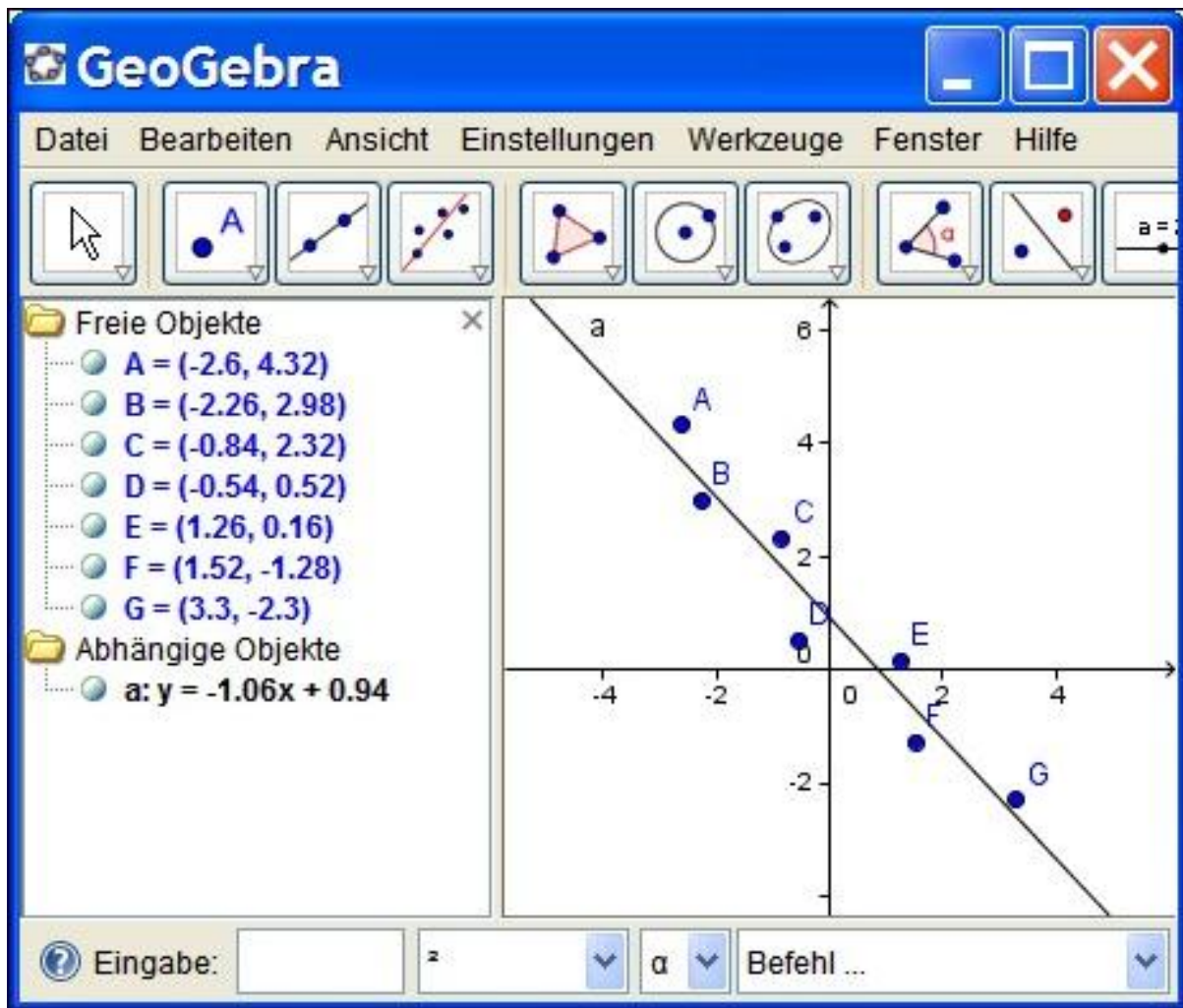
Kontrolliere die folgenden Regressionsrechnungen:

Aufgabe 1



# Lineare Regression

## Aufgabe 2



Created with [wxMaxima](https://www.wxmaxima.de/).