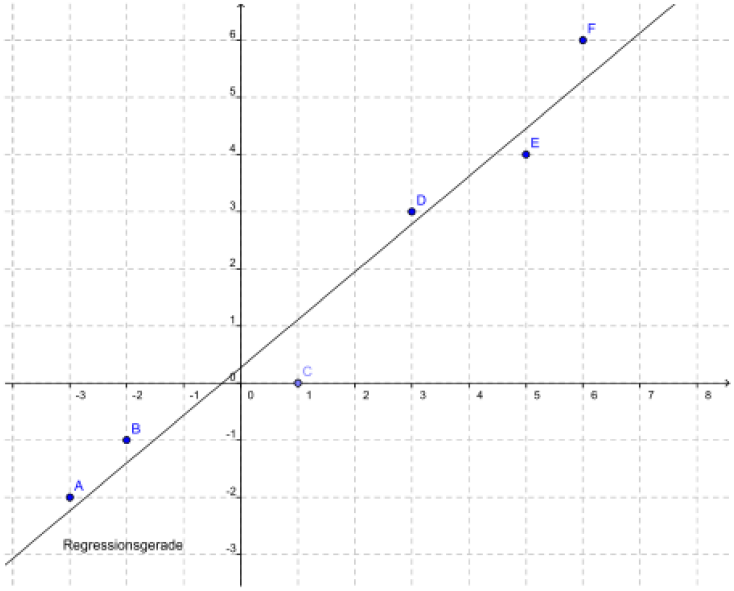
Lineare Regression

Dokumentnummer: DX1623
Fachgebiet: Trendanalyse, Analysis, Statistik
Einsatz: ab 4HAK (drittes Lernjahr)

1 Aufgabe

Figure 1:



2 Lösung

```
(%i1) X:[-3,-2,1,3,5,6];
      Y:[-2,-1,0,3,4,6];
(%o1) [-3,-2,1,3,5,6]
(%o2) [-2,-1,0,3,4,6]
```

```
(%i3) n:length(X);
(%o3) 6
```

```
(%i4) sx2:sum(X[i]**2,i,1,n);
      sx:sum(X[i],i,1,n);
      sxy:sum(X[i]*Y[i],i,1,n);
      sy:sum(Y[i],i,1,n);
(%o4) 84
(%o5) 10
(%o6) 73
(%o7) 10
```

```
(%i8) g1:a*sx2+b*sx=sxy;
      g2:a*sx+b*n=sy;
(%o8) 10 b+84 a=73
(%o9) 6 b+10 a=10
```

```
(%i10) l:algsys([g1,g2],[a,b]);
```

$$(\%o10)\ \left[\left[a=\frac{169}{202},b=\frac{55}{202}\right]\right]$$

```
(%i19) a:ev(a,l)$a:floor(a*100+0.5)/100.0;
       b:ev(b,l)$b:floor(b*100+0.5)/100.0;
```

$$(\%o20)\ 0.84$$

$$(\%o22)\ 0.27$$

```
(%i23) Regressionsgerade:y=a*x+b;
```

$$(\%o23)\ y=0.84\,x+0.27$$

3 Übungsaufgabe

Figure 2: