FORMATIONS AUX STATISTIQUES : MANUEL DU FORMATEUR DE NIVEAU 1

Janvier 1991

SCÉNARIO 6

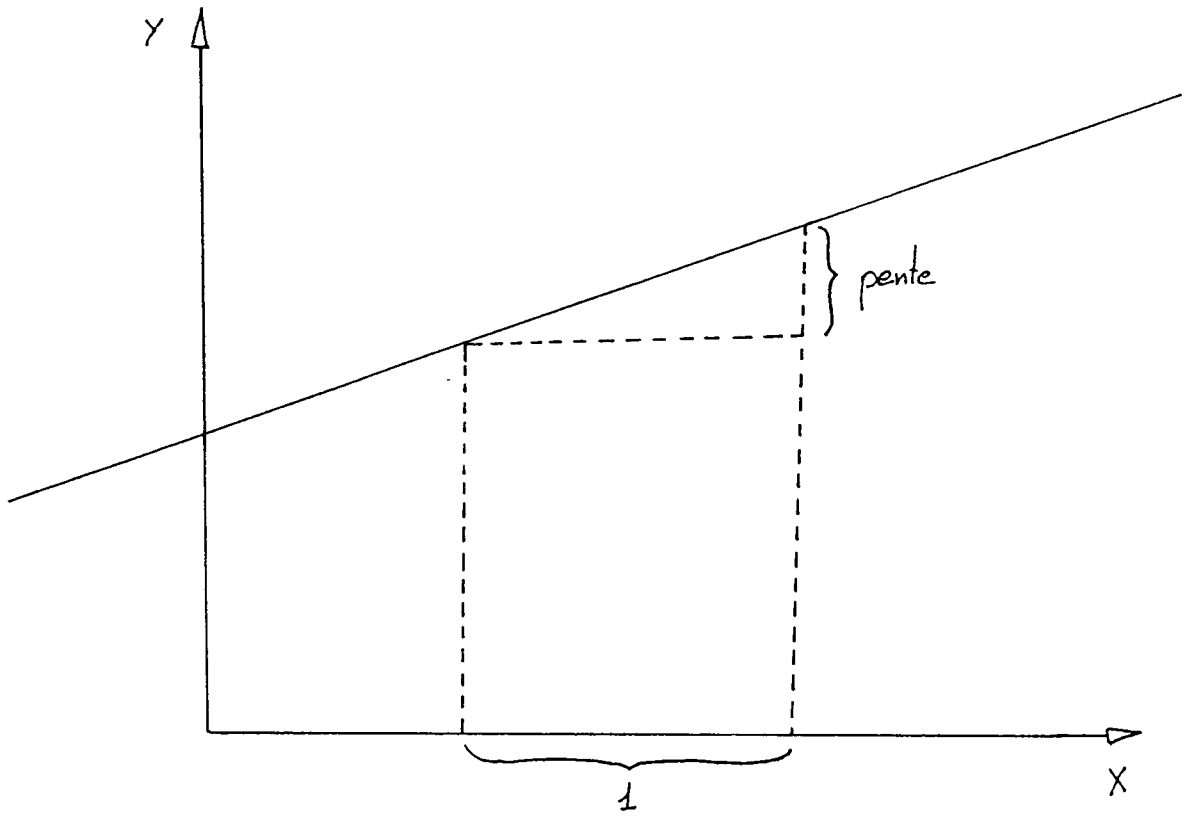
Ajustement à une droite

INRA

TRANSPARENTS

DÉPARTEMENT DE BIOMÉTRIE

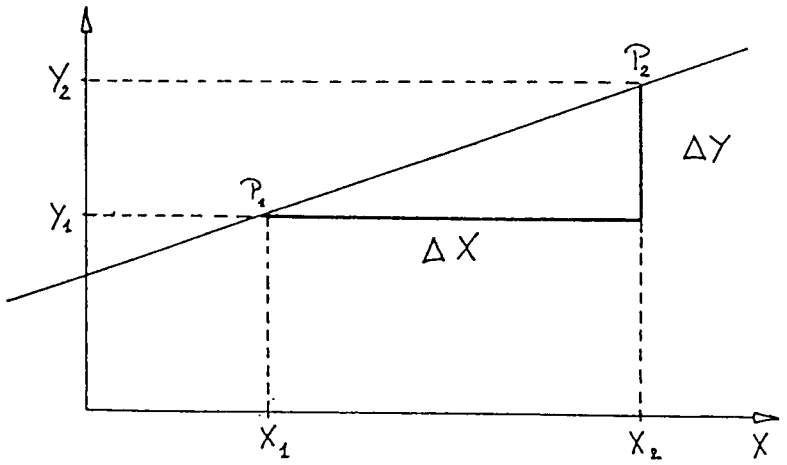
formation permanente



pente $=?$

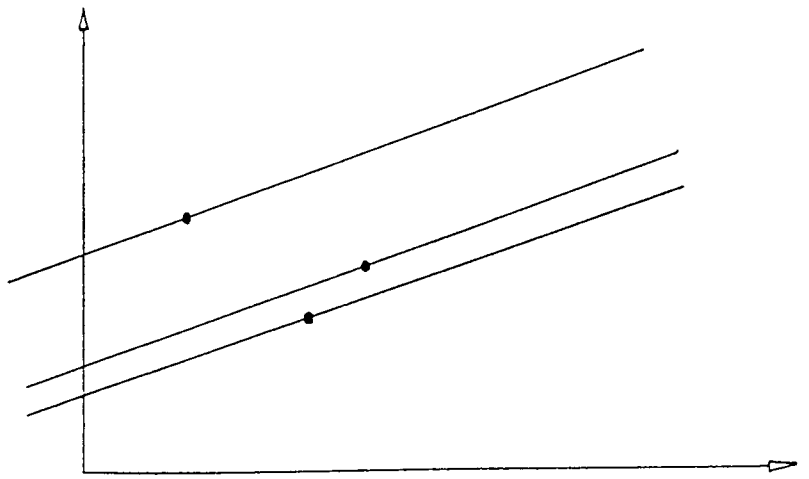
<u>variation</u> de Y correspondant à une augmentation de X égale à 1 unité

la pente



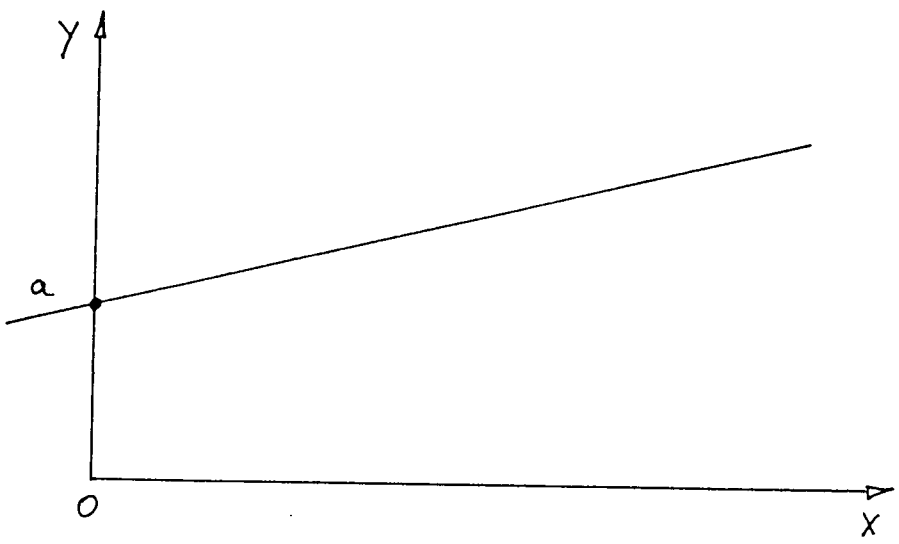
$$\text{pente} = \frac{\Delta Y}{\Delta X} = \Delta Y \text{ si } \Delta X = 1$$
$$= \frac{Y_2 - Y_1}{X_2 - X_1}$$

pente : suffisant pour caractériser une droite?



droites parallèles : même pente. Droites différentes

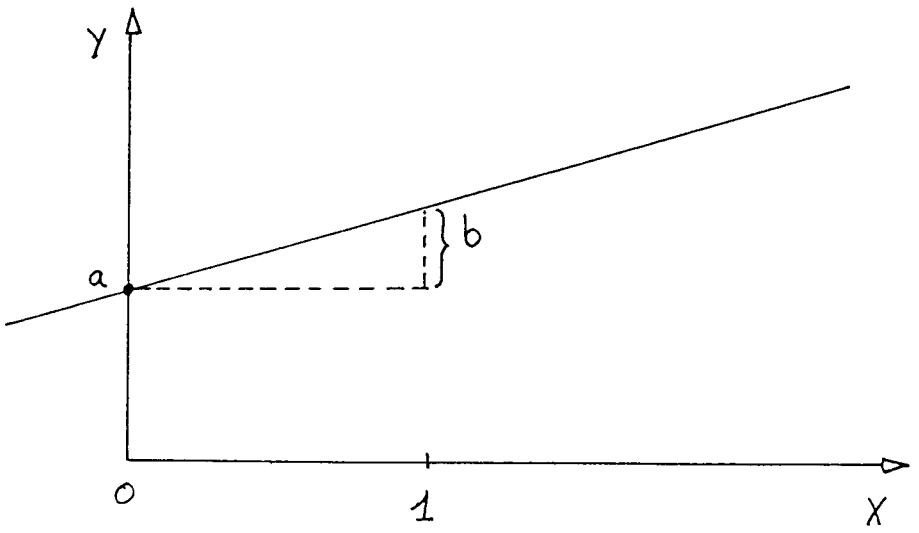
⇒ il faut fixer un point sur la droite

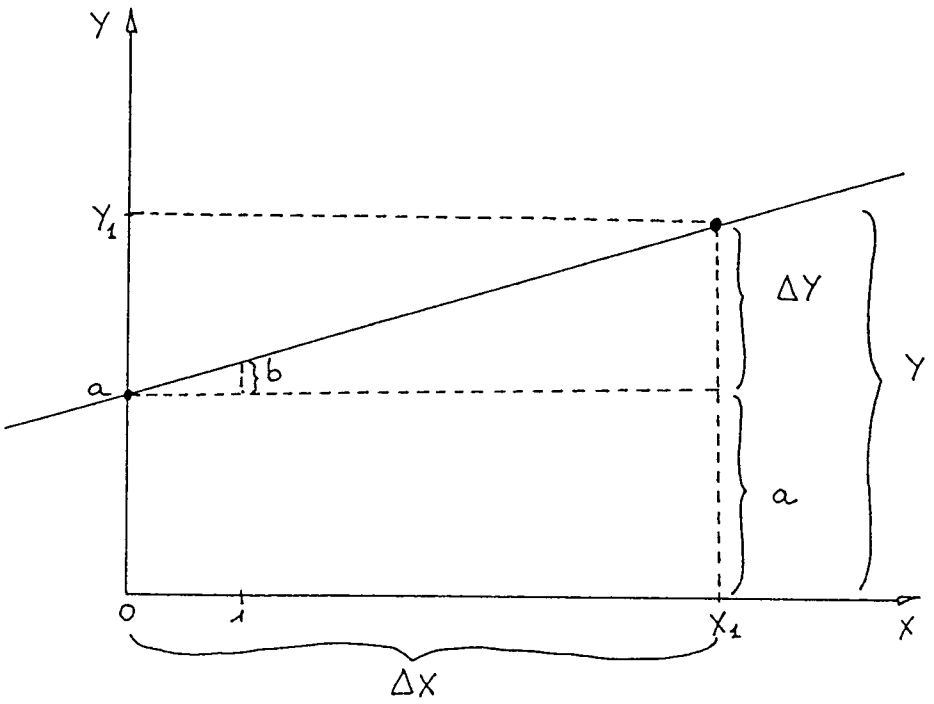


fixer le point (0,a)

a : ordonnée à l'origine

b : pente





$Y_1 = ?$ $\qquad\qquad$ $Y_1 = a + \Delta Y$

$\Delta Y = ?$

augmentation égale à 1 (en X)

$\rightarrow$ augmentation égale à b (en Y)

augmentation égale à ΔX (en X)

$\rightarrow$ augmentation égale à $b.\Delta X$ (en Y)

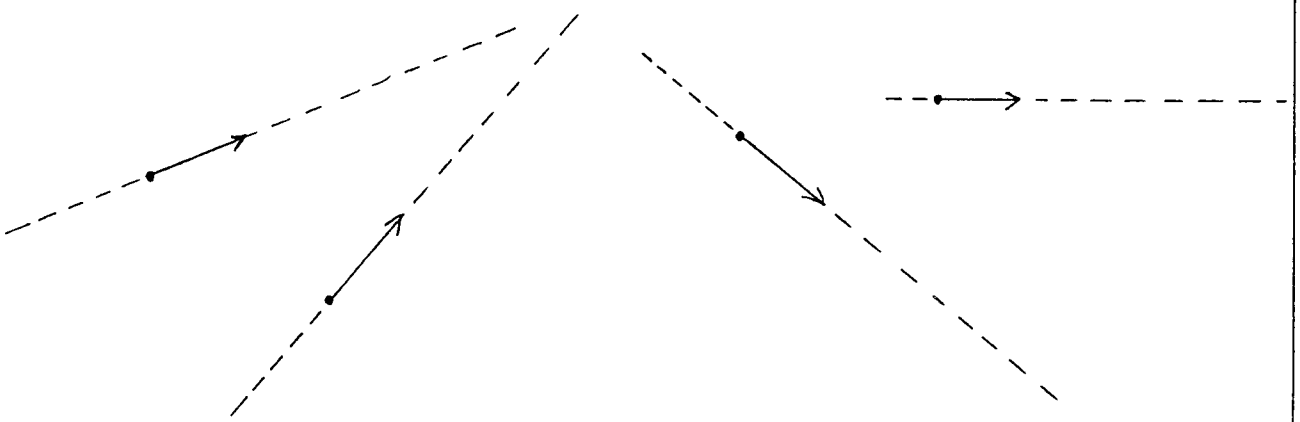
$\Delta Y = b.\Delta X$ $\qquad\qquad$ $Y_1 = a + b.\Delta X$

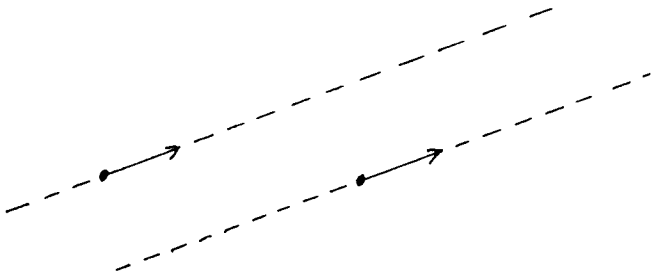
or $\Delta X = X_1 - 0 = X_1$

Donc, $Y_1 = a + b.X_1 \Longrightarrow Y = a + b.X$

1 droite = ?

1 point + 1 pente

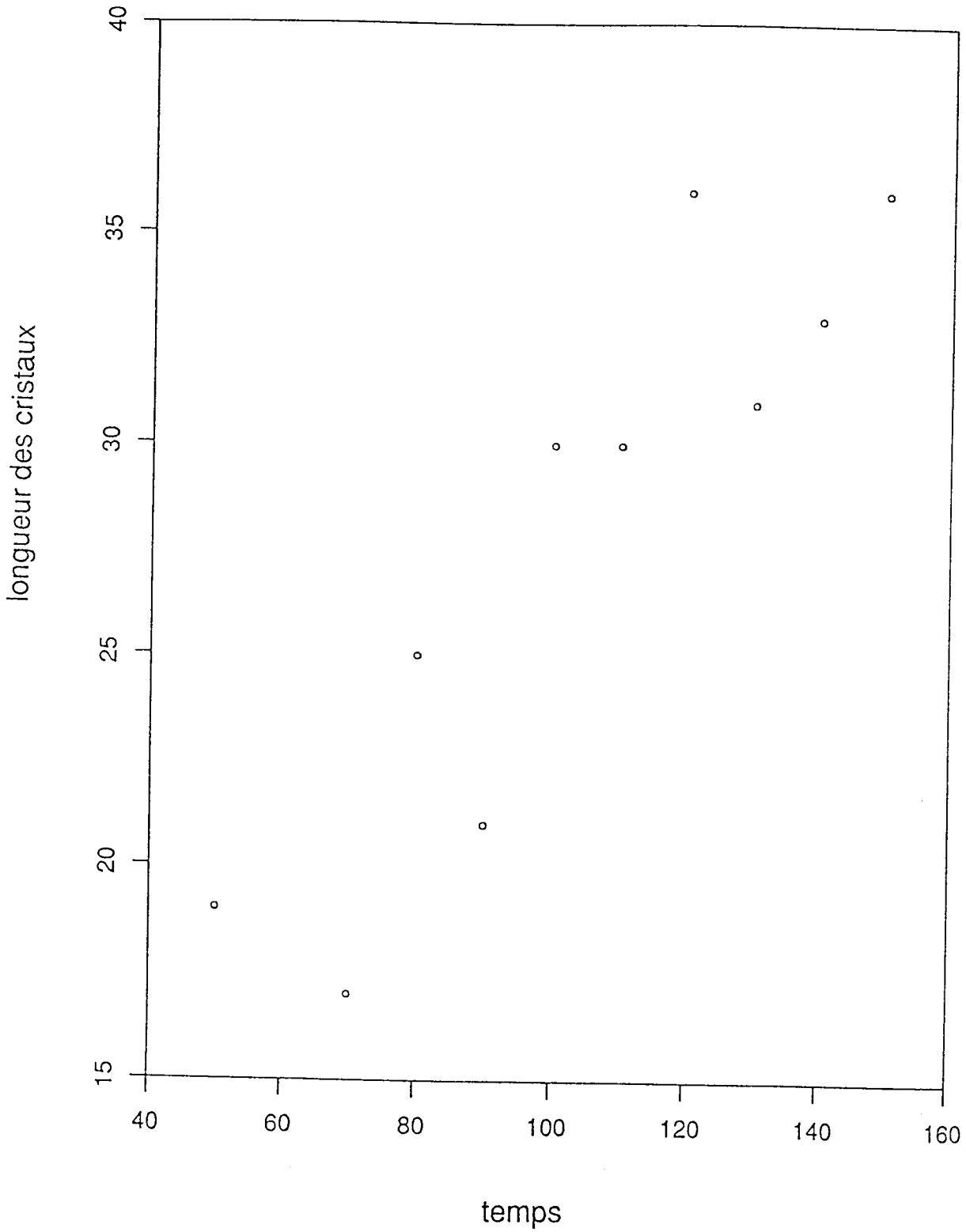


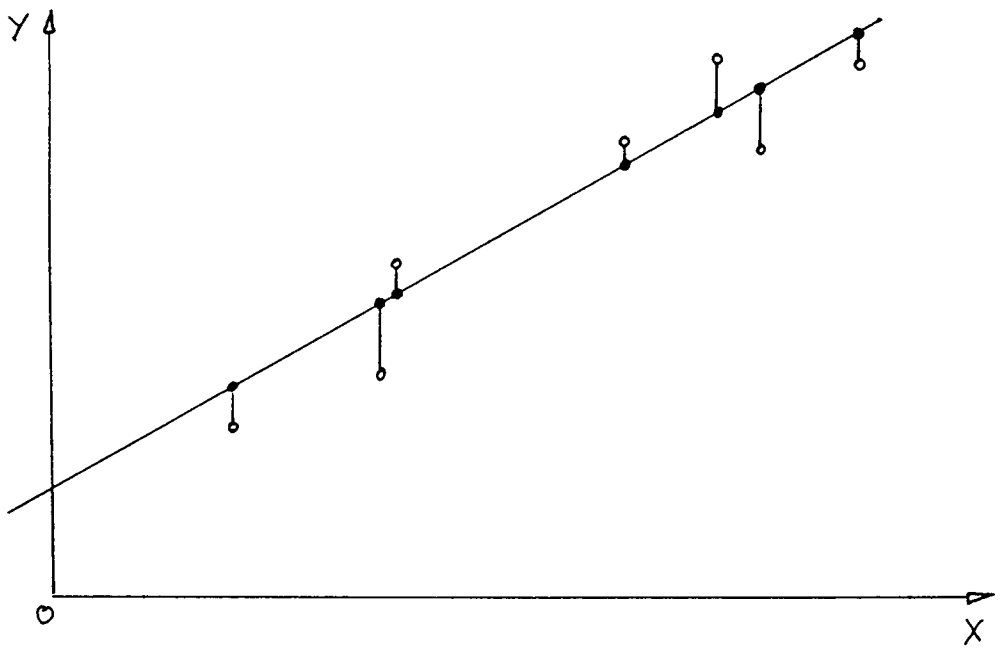


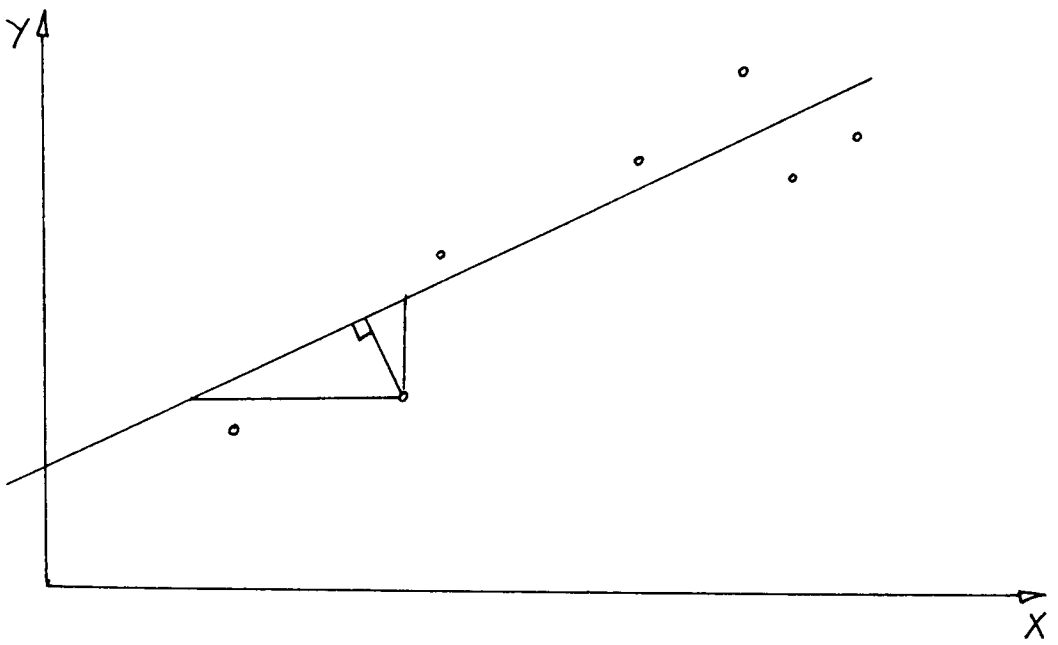
droites parallèles

même pente

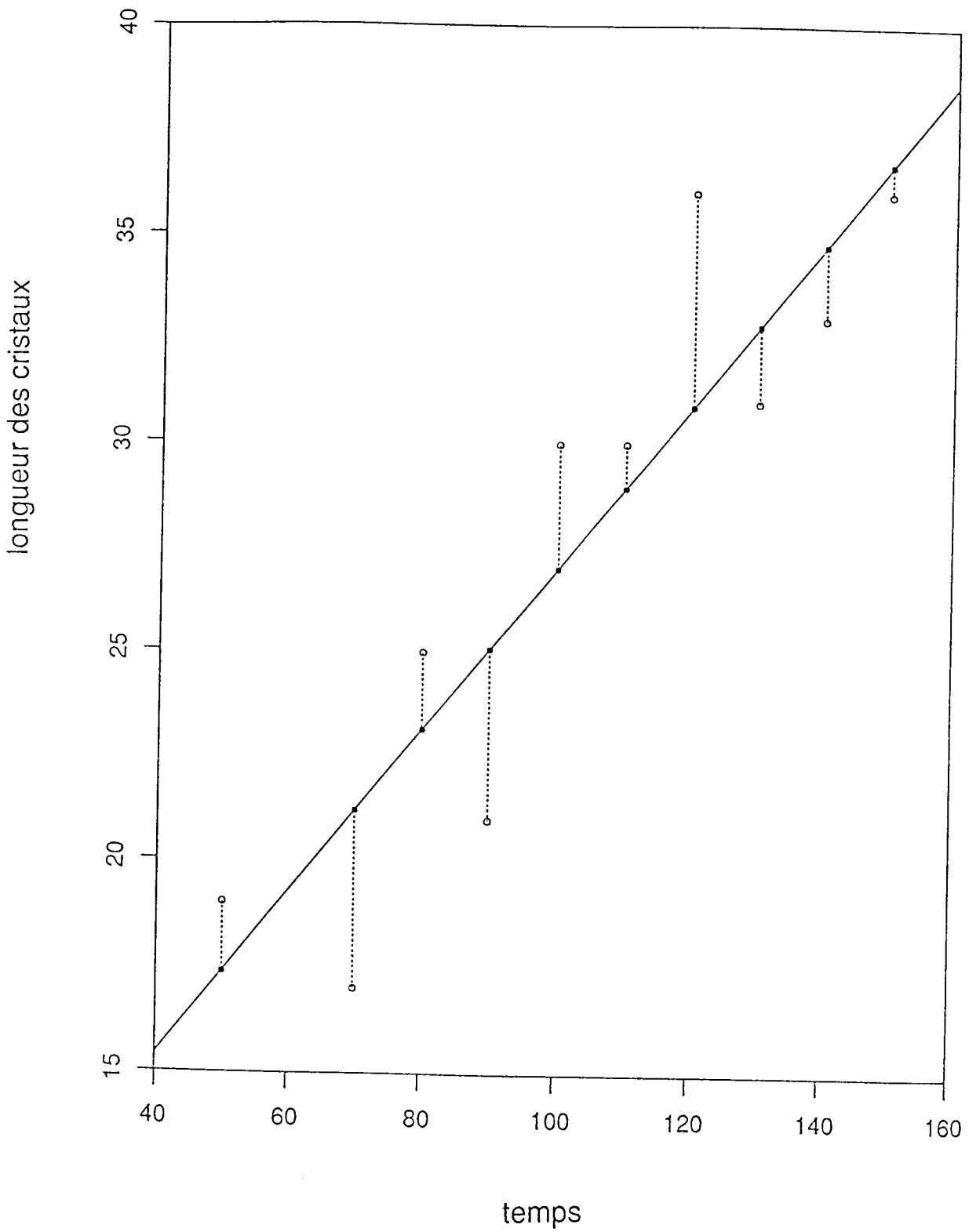
les donnees


longueur des cristaux
15
20
25
30
35
40
40
60
80
100
120
140
160
temps


Y
O
X

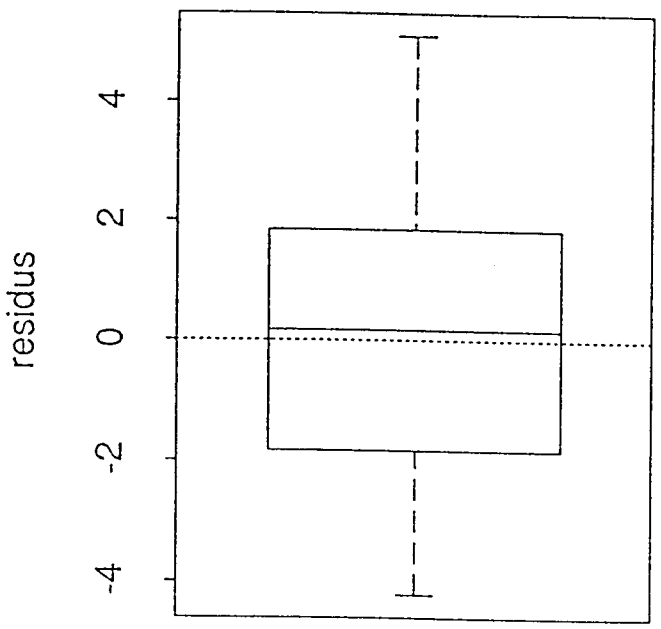

Y
X

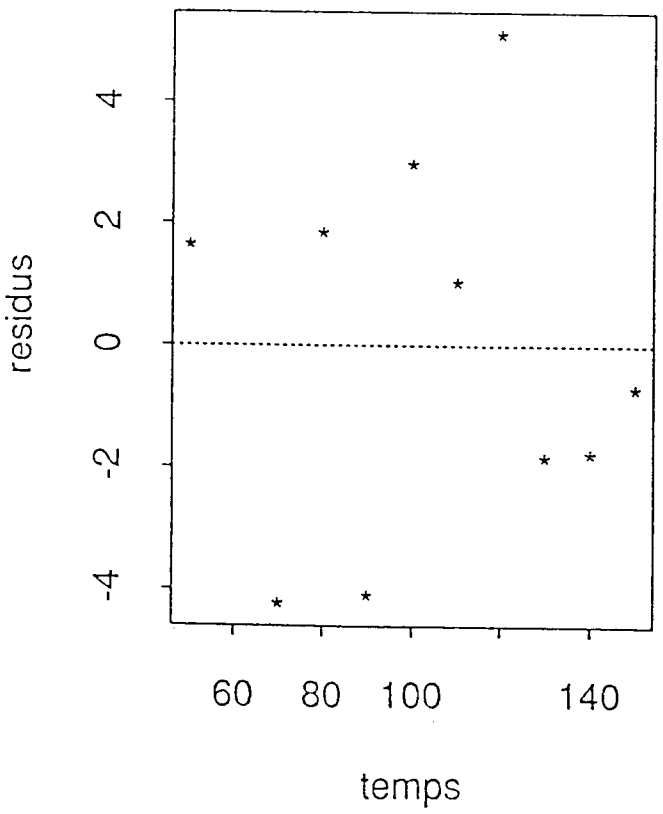
droite des moindres carrés ajustés et écarts

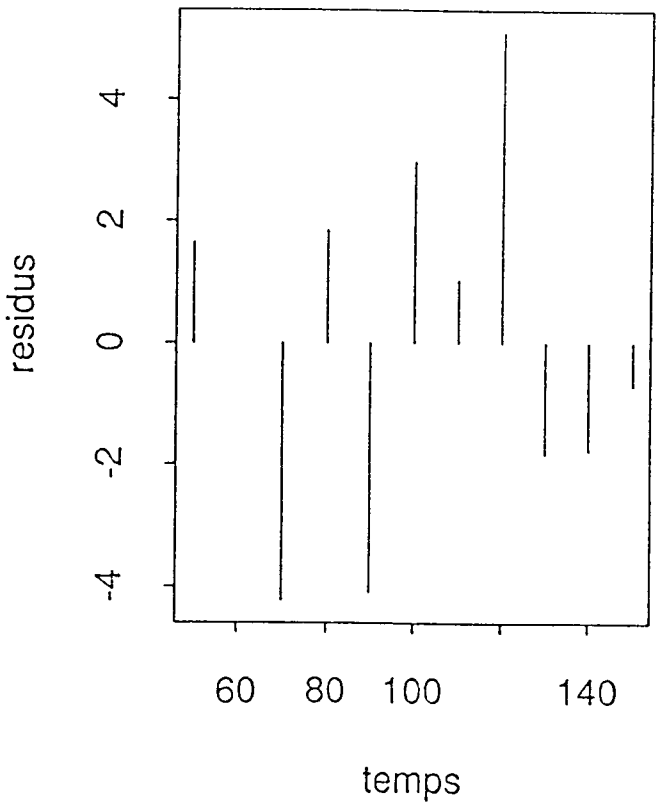


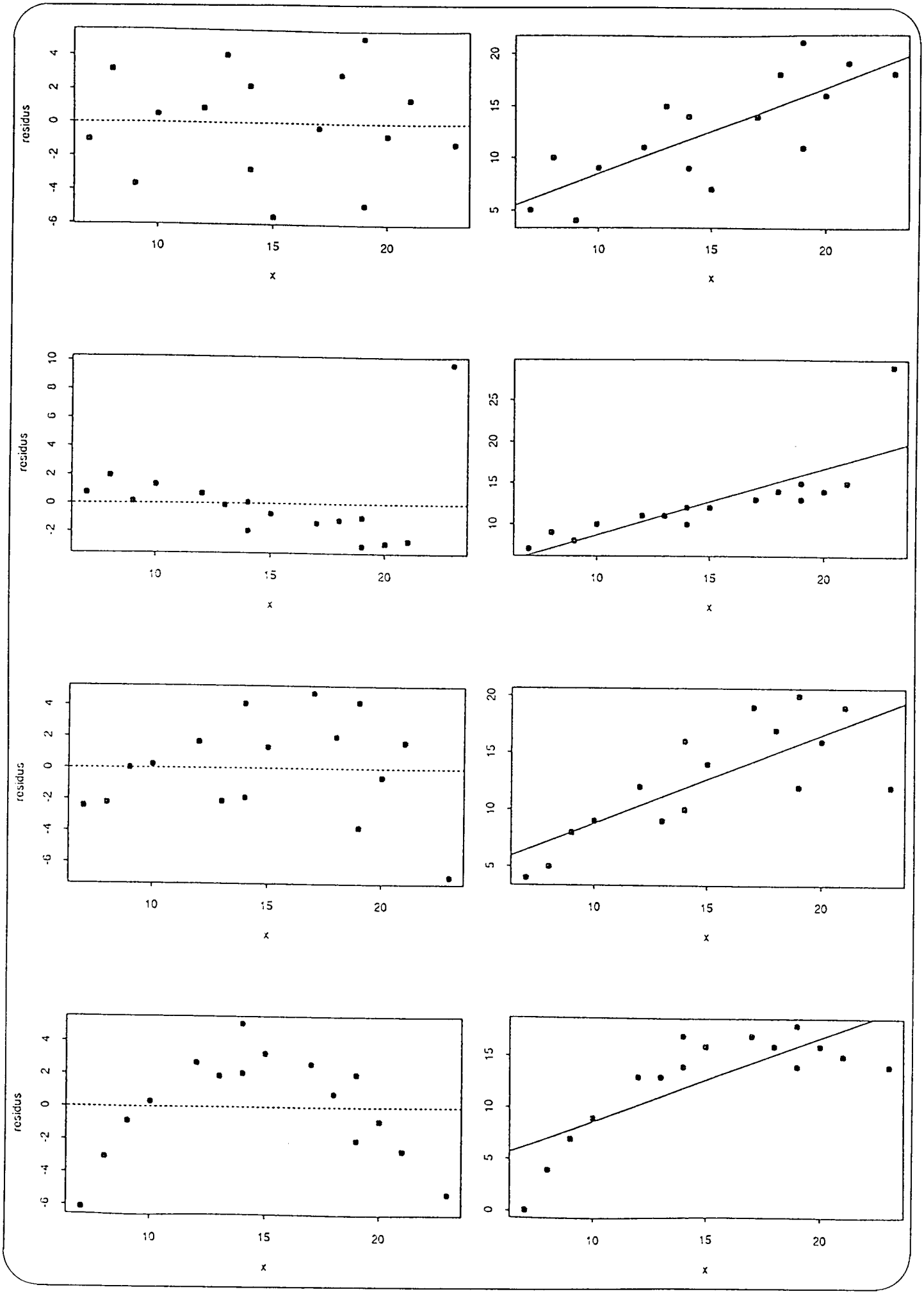
les résidus - représentations graphiques

```
N = 10    Median = 0.1688312
Quartiles = -1.831169, 1.844156

Decimal point is at the colon

  -4 : 21
  -3 :
  -2 :
  -1 : 88
  -0 : 7
   0 :
   1 : 068
   2 :
   3 : 0
   4 :
   5 : 1
```





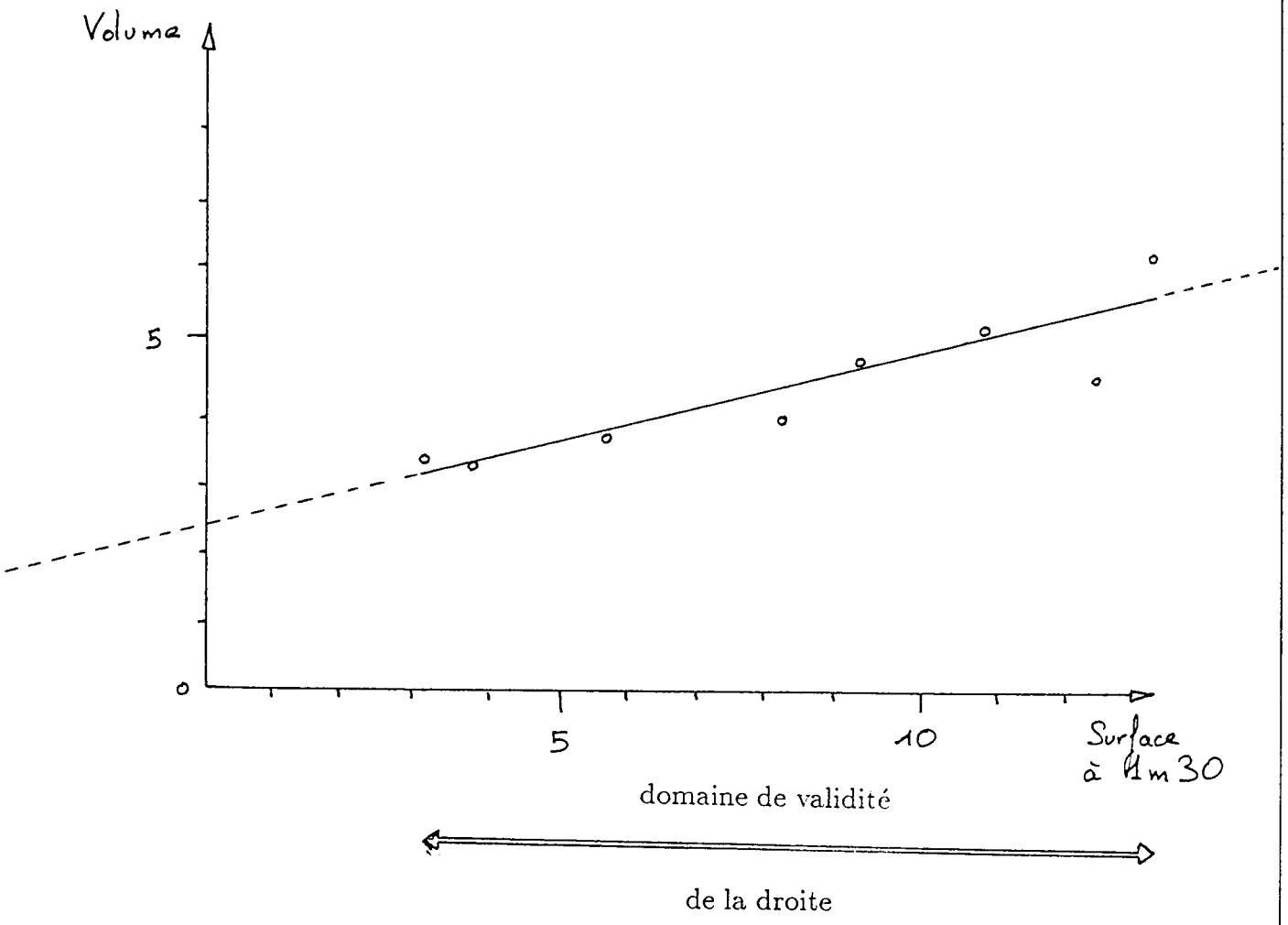


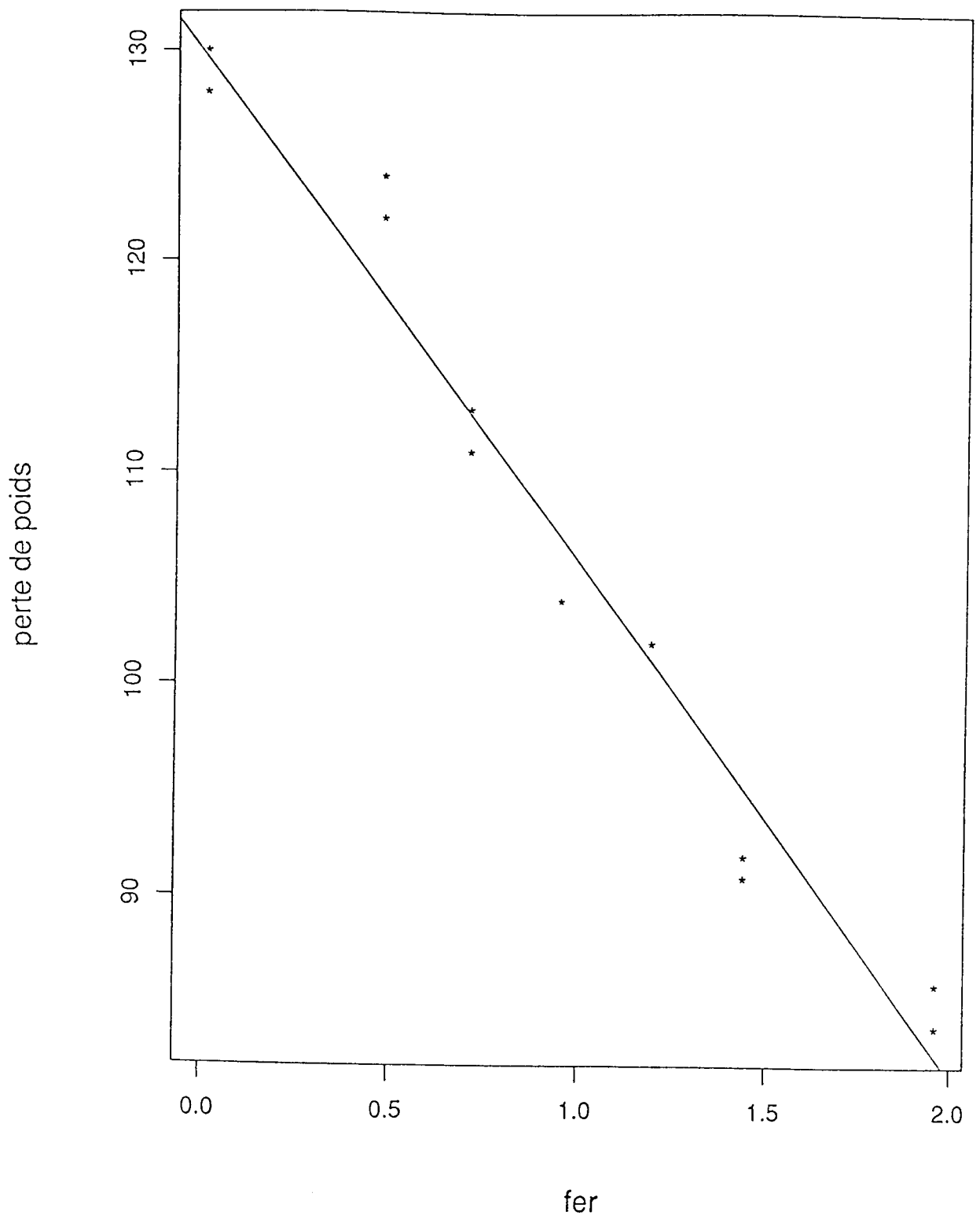

residus
x
10
15
20
-6
-4
-2
0
2
4
5
10
15
20
-2
0
2
4
6
8
10
25

Epiceas

Y = volume de l'arbre

X = surface du tronc mesurée à 1 m 30




perte de poids
130
120
110
100
90
0.0
0.5
1.0
1.5
2.0
fer

```
N = 12   Median = 0.0833333
Quartiles = -0.666667, 0.833333

Decimal point is at the colon

  -2 : 2
  -1 : 7
  -0 : 7772
   0 : 3388
   1 : 88
```