Nadjib_BENAMROUCHE

October 12, 2022

[2]:
```
vitesse <- c(4,7,8,9,10,11,11,12,12,13,14,15,15,16,17,18,19,20,24,25)
```

[3]:
```
distance <- c(2,4,16,10,26,17,28,20,28,26,36,26,54,40,50,76,46,48,92,85)
```

[4]:
```
tab <- data.frame(vitesse, distance)
tab
```

A data.frame: 20 × 2

vitesse <dbl>	distance <dbl>
4	2
7	4
8	16
9	10
10	26
11	17
11	28
12	20
12	28
13	26
14	36
15	26
15	54
16	40
17	50
18	76
19	46
20	48
24	92
25	85

[5]:
```
# vitesse moyenne
vit_moy = mean(vitesse)
```

[6]:
```
# distance moyenne
dis_moy = mean(distance)
```

[7]:
```
# variance vitesse
var_vit = var(vitesse)
```

[8]:
```
# variance distance
var_dis = var(distance)
```

[9]:
```
var_vit
var_dis
```

29.7894736842105

642.789473684211

[11]:
```
# Calcule de la coverance
cov = cov(vitesse, distance)
cov
```

128

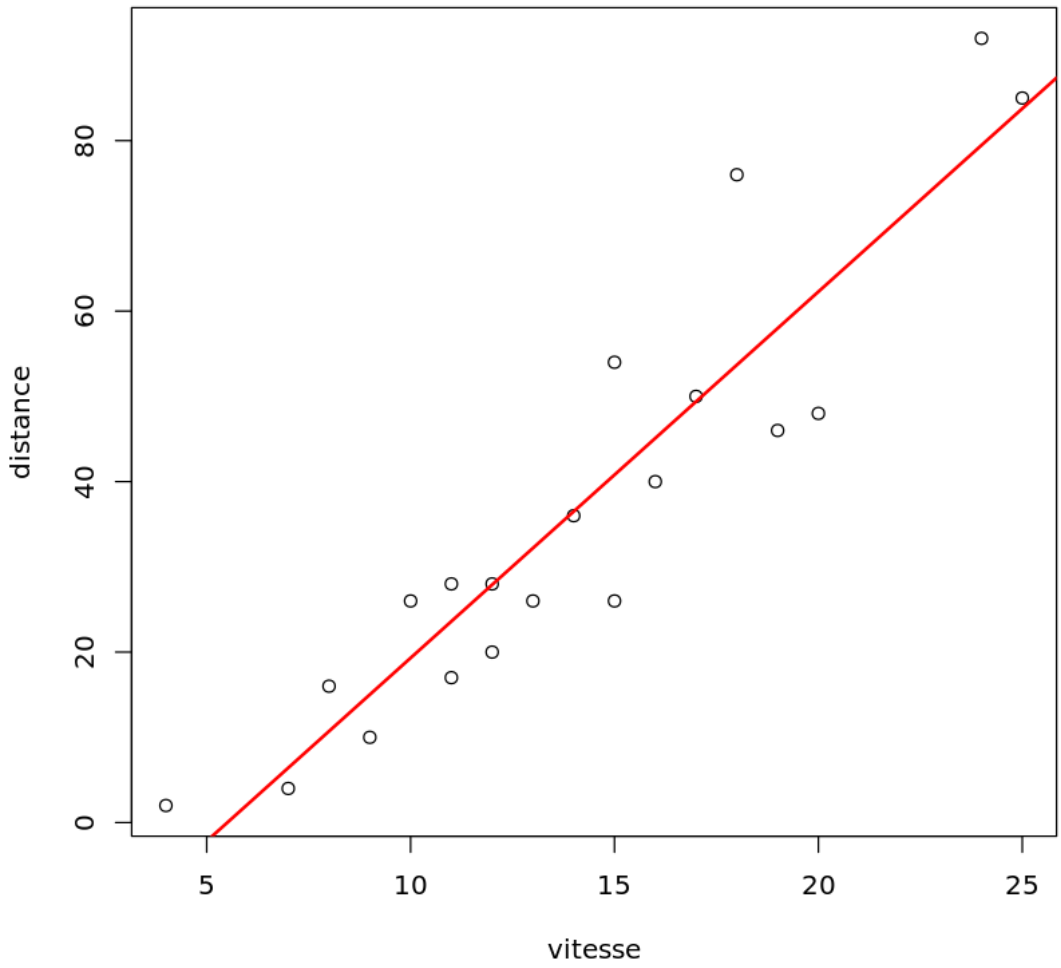
[12]:
```
# Calcul des parametres
a = cov / var_vit
b = dis_moy - a*vit_moy
```

[13]:
```
#Regression lineare
reg <- lm(distance ~ vitesse ,data = tab )
reg
```

```
Call:
lm(formula = distance ~ vitesse, data = tab)

Coefficients:
(Intercept)      vitesse
    -23.655        4.297
```

[16]:
```
plot(distance ~ vitesse , data = tab)
abline(reg,col="red",lwd=2)
```



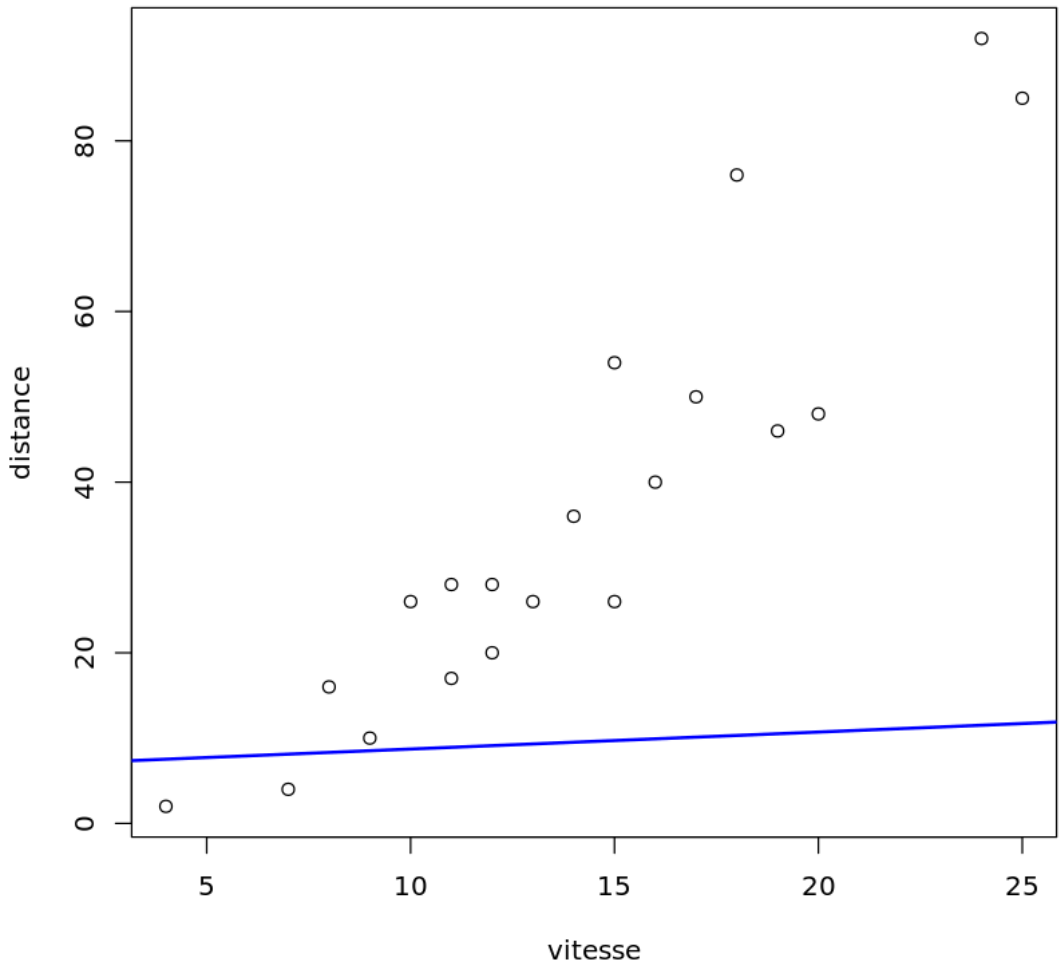
[17]:
```
a2 = coverance / var_dis
b2 = vit_moy - a2*dis_moy
```

[19]:
```
reg2 <- lm(vitesse ~ distance ,data = tab )
reg2
```

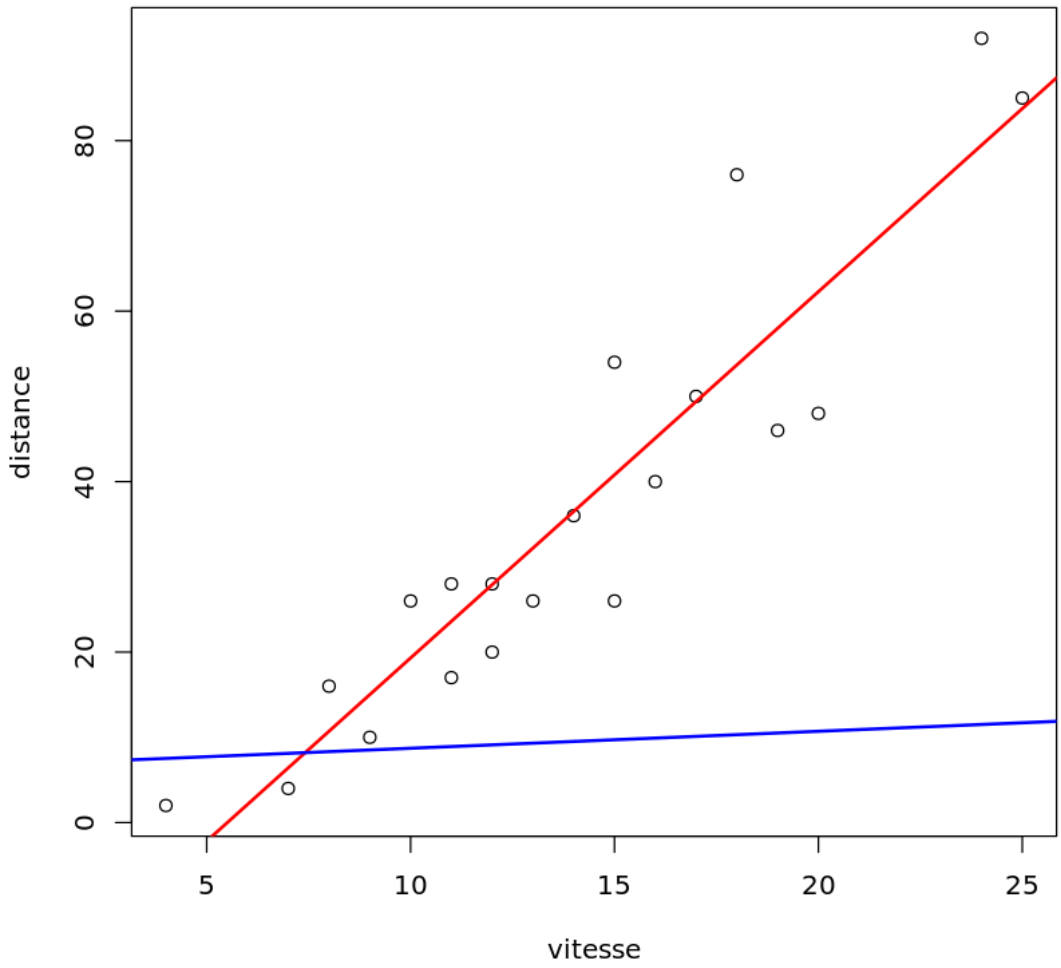
```
Call:
lm(formula = vitesse ~ distance, data = tab)

Coefficients:
(Intercept)     distance
     6.7317       0.1991
```

[20]:
```
plot(distance ~  vitesse, data = tab)
abline(reg2,col="blue",lwd=2)
```



[21]:
```
plot(distance ~  vitesse, data = tab)
abline(reg,col="red",lwd=2)
abline(reg2,col="blue",lwd=2)
```



[23]:
```
ang1 = atan(a)*(180/pi)
```

[24]:
```
ang2 = atan(a2)*(180/pi)
```

[25]:
```
# angle entre les regressions
ang = ang1 - ang2
ang
```

65.6366427832529

[26]:
```
# coef corelation
coef = sqrt(a * a2)
coef
```

0.92500520486813