

STAT151A-Lab4

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```
x = c(5,6,3,7,4,2)
y = c(3.5,3.8,3.1,4,3.2,3)
x_bar = mean(x)
x_bar

## [1] 4.5

y_bar = mean(y)
y_bar

## [1] 3.433333
X_iY_i = x * y
X_iY_i

## [1] 17.5 22.8 9.3 28.0 12.8 6.0
X_sqr = x ^ 2
X_sqr

## [1] 25 36 9 49 16 4
n = 6
sum(X_iY_i)

## [1] 96.4
sum(x^2)

## [1] 139
B = (sum(X_iY_i) - n*x_bar*y_bar) / (sum(x^2) - n*x_bar^2)
B

## [1] 0.2114286
A = y_bar - B*x_bar
A

## [1] 2.481905
y_hat <- A + B*x
y_hat

## [1] 3.539048 3.750476 3.116190 3.961905 3.327619 2.904762
E <- y - y_hat
E

## [1] -0.03904762 0.04952381 -0.01619048 0.03809524 -0.12761905 0.09523810
E_sqr = E^2
E_sqr

## [1] 0.0015247166 0.0024526077 0.0002621315 0.0014512472 0.0162866213
## [6] 0.0090702948
```

```

SSR = sum(E_sqr)
SSR

## [1] 0.03104762

RMS = SSR/4
RMS

## [1] 0.007761905

S_xx = sum(x^2) - 6*x_bar^2
S_xx

## [1] 17.5

t = B/(sqrt(RMS/S_xx))
t

## [1] 10.03919

TSS = sum((y - y_bar)^2)
TSS

## [1] 0.8133333

RSS = sum((y - y_hat)^2)
RSS

## [1] 0.03104762

RegSS = sum((y_hat - y_bar)^2)
RegSS

## [1] 0.7822857

RegMS = RegSS/1
RegMS

## [1] 0.7822857

RMS = RSS/4
RMS

## [1] 0.007761905

F_value = RegMS/RMS
F_value

## [1] 100.7853

F_critical = qf(0.95,1,4)
F_critical

## [1] 7.708647

R_sqr = 1- RSS/TSS
R_sqr

## [1] 0.9618267

```