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### TD3 ###
age=c(35,45,55,65,75)
# On modifie le vecteur de tension
tension=c(114,124,143,156,166)
Tens=data.frame(age,tension)
reg1=lm(tension~age,data=Tens)
summary(reg1)
av1=anova(reg1); av1
# calcul manuel de anova()
sum((reg1$fitted.values-mean(tension))^2) # 1849.6 --> SCE
sum((reg1$residuals)^2) # 21.6 --> SCR
1849.6+21.6; sum((tension-mean(tension))^2) # 1849.6+21.6=1871.2 --> SCT
# calcul manuel de R2 (reg1)
sum((reg1$fitted.values-mean(tension))^2)/1871.2 # 0.9885
# modele log_lineaire
lnage=log(age)
lntens=log(tension)
reg2=lm(lntens~lnage)
summary(reg2)
av2=anova(reg2); av2
# calcul manuel de R2 (reg2)
sum((reg2$fitted.values-mean(lntens))^2)/sum((lntens-mean(lntens))^2)
# 0.9865
sum((lntens-mean(lntens))^2) # sct (reg2) : 0.09796667
# calcul de pseudo-R2
1-sum((exp(reg2$fitted.values)-tension)^2)/1871.2 # 1-scr/sct (reg1)
# 0.9885794 > 0.9885 : reg2 est meilleur
par(mfrow=c(2,2))
plot(reg1)
abline(reg)
#U:/Documents/eco2324/oeufs.txt
oeufs=read.table("U:/Documents/eco2324/oeufs.txt",header=TRUE)

reg.oeufs=lm(POIDS~HAUTEUR,oeufs);summary(reg.oeufs)
anova(reg.oeufs)
plot(oeufs$HAUTEUR,oeufs$POIDS)
abline(reg.oeufs)
lnh=log(oeufs$HAUTEUR)
lnp=log(oeufs$POIDS)
lnOeufs=data.frame(lnh,lnp)
reg.lnOeufs=lm(lnp~lnh,data=lnOeufs)
summary(reg.lnOeufs)
anova(reg.lnOeufs)
plot(lnh,lnp)
abline(reg.lnOeufs)
lny=reg.lnOeufs$fitted.values
y=exp(lny)
e=oeufs$POIDS-y
scr=sum(e^2)
pR2=1-scr/(7498.7+282.2);pR2

par(mfrow = c(3,2))
plot(reg.oeufs, which = 1)
plot(reg.lnOeufs, which = 1)
plot(reg.oeufs, which = 2)
plot(reg.lnOeufs, which = 2)
plot(reg.oeufs, which = 3)
plot(reg.lnOeufs, which = 3)

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