

TMA4315: Project 2

jototlan@stud.ntnu.no (10018), martigtu@stud.ntnu.no (10037)

Problem 1

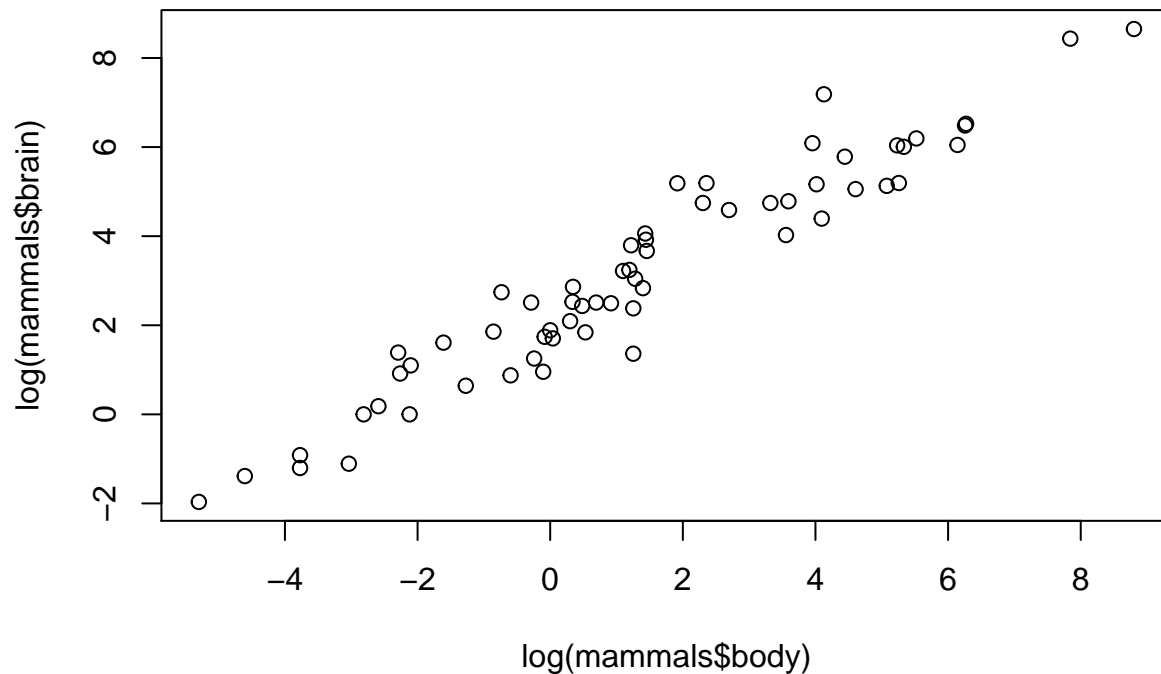
```
mammals <- read.table(  
  "https://www.math.ntnu.no/~jarlet/statmod/mammals.dat",  
  header=T)
```

a)

```
str(mammals)
```

```
## 'data.frame': 62 obs. of 3 variables:  
## $ species: chr "Arctic fox" "Owl monkey" "Mountain beaver" "Cow" ...  
## $ body : num 3.38 0.48 1.35 465 36.33 ...  
## $ brain : num 44.5 15.5 8.1 423 119.5 ...
```

```
mammals$species = as.factor(mammals$species)  
plot(log(mammals$body), log(mammals$brain)) # Seems pretty linear.
```



A log-log plot of the brain mass against body mass seems to reveal a linear trend. We thus fit the following model:

```
mod0 <- lm(log(brain) ~ log(body), data = mammals)  
summary(mod0)
```

```
##
## Call:
## lm(formula = log(brain) ~ log(body), data = mammals)
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-1.71550	-0.49228	-0.06162	0.43597	1.94829

```
##
## Coefficients:
```

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	2.13479	0.09604	22.23	<2e-16 ***
log(body)	0.75169	0.02846	26.41	<2e-16 ***

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6943 on 60 degrees of freedom
## Multiple R-squared:  0.9208, Adjusted R-squared:  0.9195
## F-statistic: 697.4 on 1 and 60 DF,  p-value: < 2.2e-16
```