Homework 5 W80

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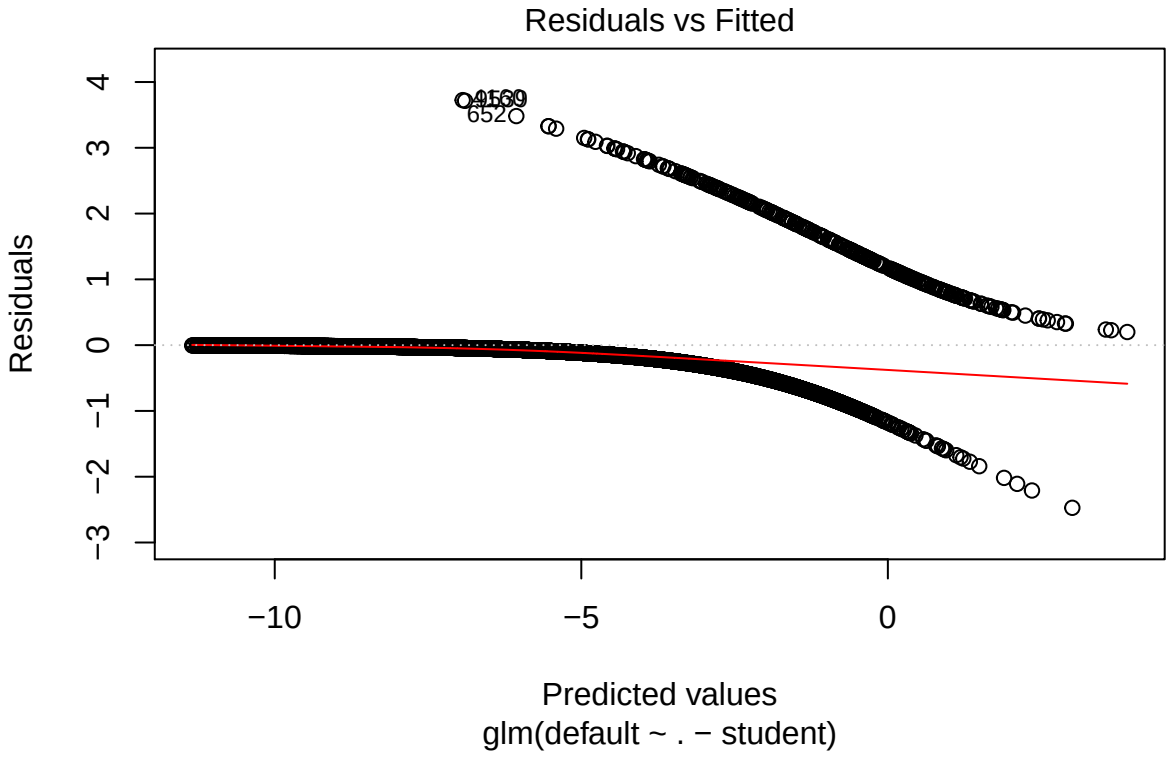
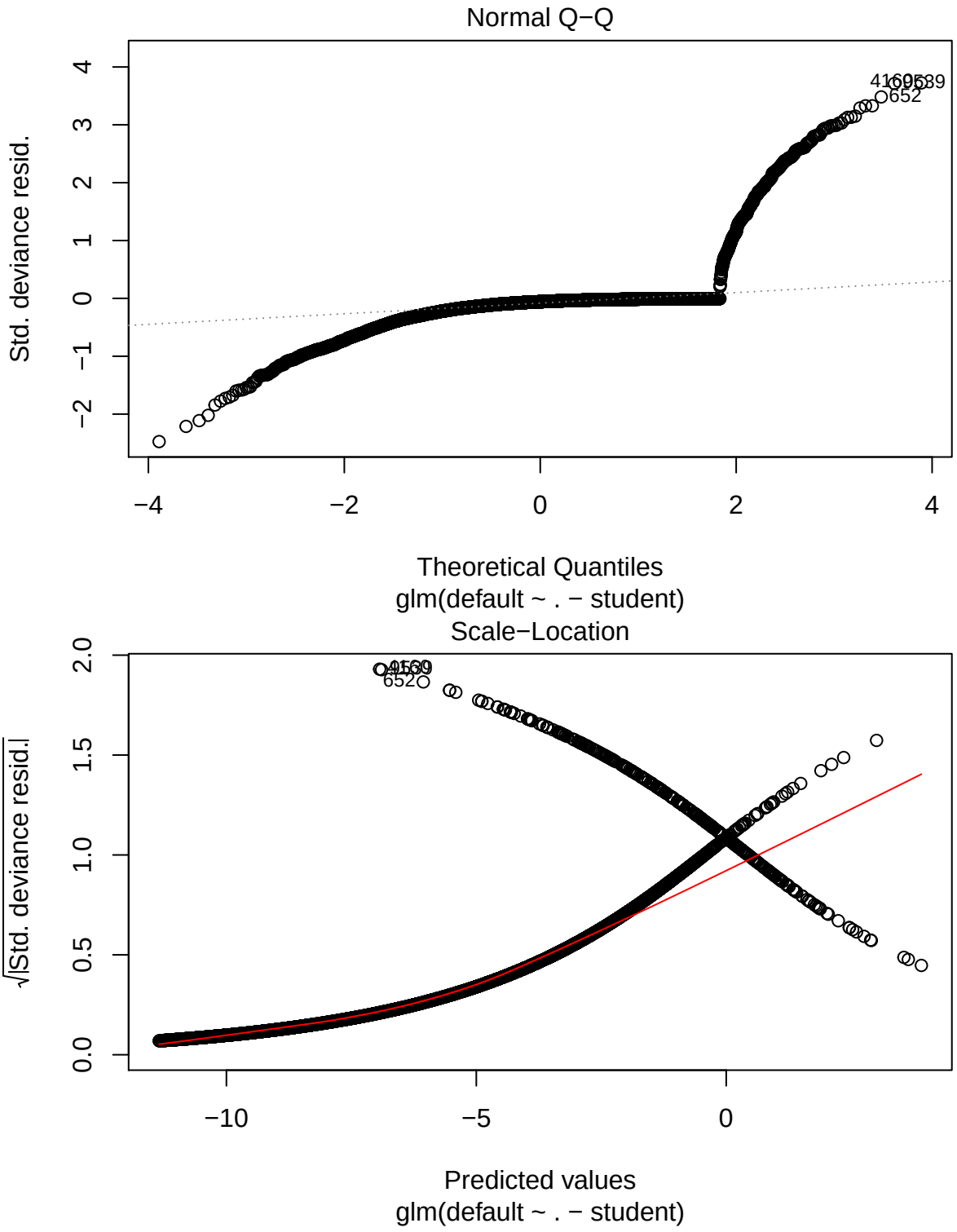
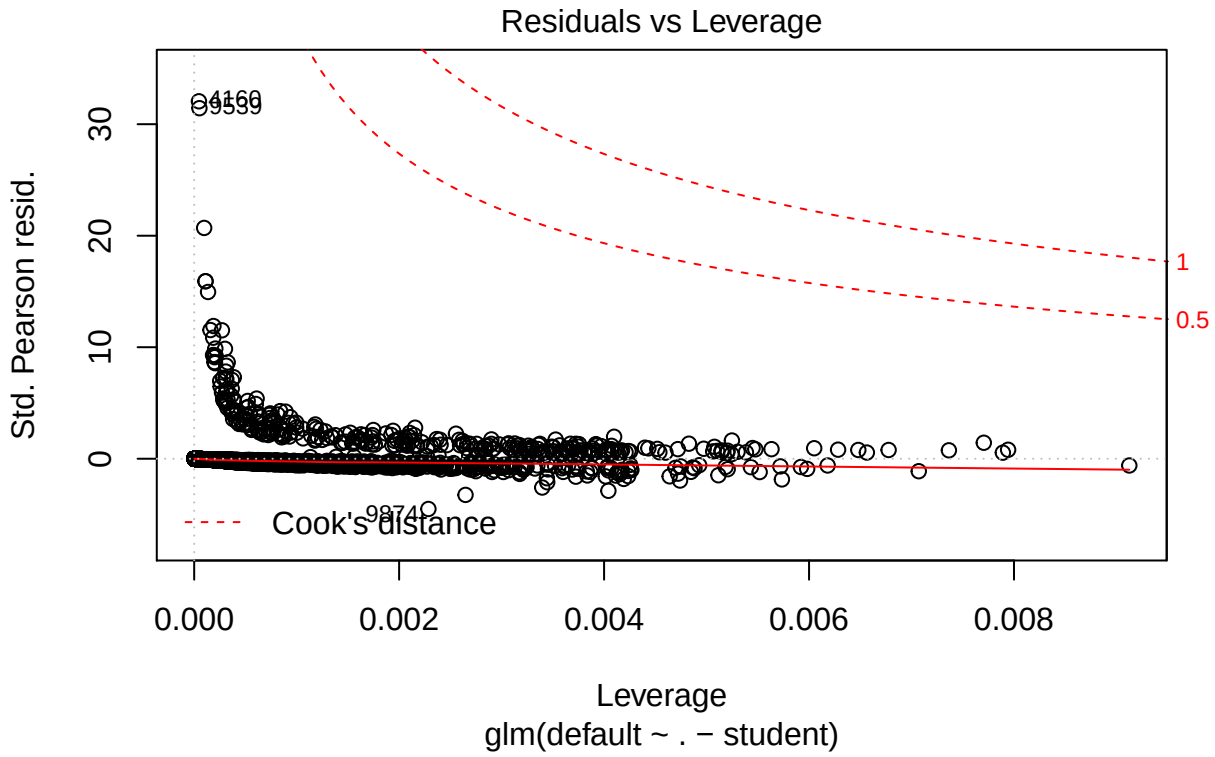
5)
A)

```
r library(ISLR) logfit = glm(default ~ .  - student, data = Default, family= binomial)
plot(logfit)
```




Normal Q−Q
Std. deviance resid.
Theoretical Quantiles
glm(default ~ . − student)
Scale−Location
√|Std. deviance resid.|
Predicted values
glm(default ~ . − student)



B)

```
r set.seed(1) train = sample(1:2500,1250,replace = FALSE) lm.fit = lm(default ~ balance, data=Default, subset=train)

## Warning in model.response(mf, "numeric"):  using type = "numeric" with a ## factor response will be ignored

## Warning in Ops.factor(y, z$residuals):  '-' not meaningful for factors

r attach(Default) mean((default -predict(lm.fit,Default))[-train]^2)

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for factors

## [1] NA
```

C)

```
r set.seed(3) train = sample(1:2500,1250,replace = FALSE) lm.fit = lm(default ~ balance, data=Default, subset=train)

## Warning in model.response(mf, "numeric"):  using type = "numeric" with a ## factor response will be ignored

## Warning in Ops.factor(y, z$residuals):  '-' not meaningful for factors

r attach(Default)

## The following objects are masked from Default (pos = 3):  ## ## balance, default, income, student

r mean((default -predict(lm.fit,Default))[-train]^2)
```

```
## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## [1] NA

r set.seed(12) train = sample(1:2500,1250,replace = FALSE) lm.fit = lm(default ~ balance,
data=Default, subset=train)

## Warning in model.response(mf, "numeric"):  using type = "numeric" with a ## factor
response will be ignored

## Warning in Ops.factor(y, z$residuals):  '-' not meaningful for factors

r attach(Default)

## The following objects are masked from Default (pos = 3):  ## ## balance, default,
income, student ## ## The following objects are masked from Default (pos = 4):  ## ##
balance, default, income, student

r mean((default -predict(lm.fit,Default))[-train]^2)

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## [1] NA

r set.seed(89) train = sample(1:2500,1250,replace = FALSE) lm.fit = lm(default ~ balance,
data=Default, subset=train)

## Warning in model.response(mf, "numeric"):  using type = "numeric" with a ## factor
response will be ignored

## Warning in Ops.factor(y, z$residuals):  '-' not meaningful for factors

r attach(Default)

## The following objects are masked from Default (pos = 3):  ## ## balance, default,
income, student ## ## The following objects are masked from Default (pos = 4):  ## ##
balance, default, income, student ## ## The following objects are masked from Default
(pos = 5):  ## ## balance, default, income, student

r mean((default -predict(lm.fit,Default))[-train]^2)

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## [1] NA
```

```
r logfit = glm(default ~ ., data = Default, family= binomial) set.seed(1) train = sample(1:2500,1250,rep
= FALSE) lm.fit = lm(default ~ balance, data=Default, subset=train)

## Warning in model.response(mf, "numeric"):  using type = "numeric" with a ## factor
response will be ignored

## Warning in Ops.factor(y, z$residuals):  '-' not meaningful for factors

r attach(Default)

## The following objects are masked from Default (pos = 3):  ## ## balance, default,
income, student ## ## The following objects are masked from Default (pos = 4):  ## ##
balance, default, income, student ## ## The following objects are masked from Default
(pos = 5):  ## ## balance, default, income, student ## ## The following objects are
masked from Default (pos = 6):  ## ## balance, default, income, student

r mean((default -predict(lm.fit,Default))[-train]^2)

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## Warning in Ops.factor(default, predict(lm.fit, Default)):  '-' not ## meaningful for
factors

## [1] NA
```

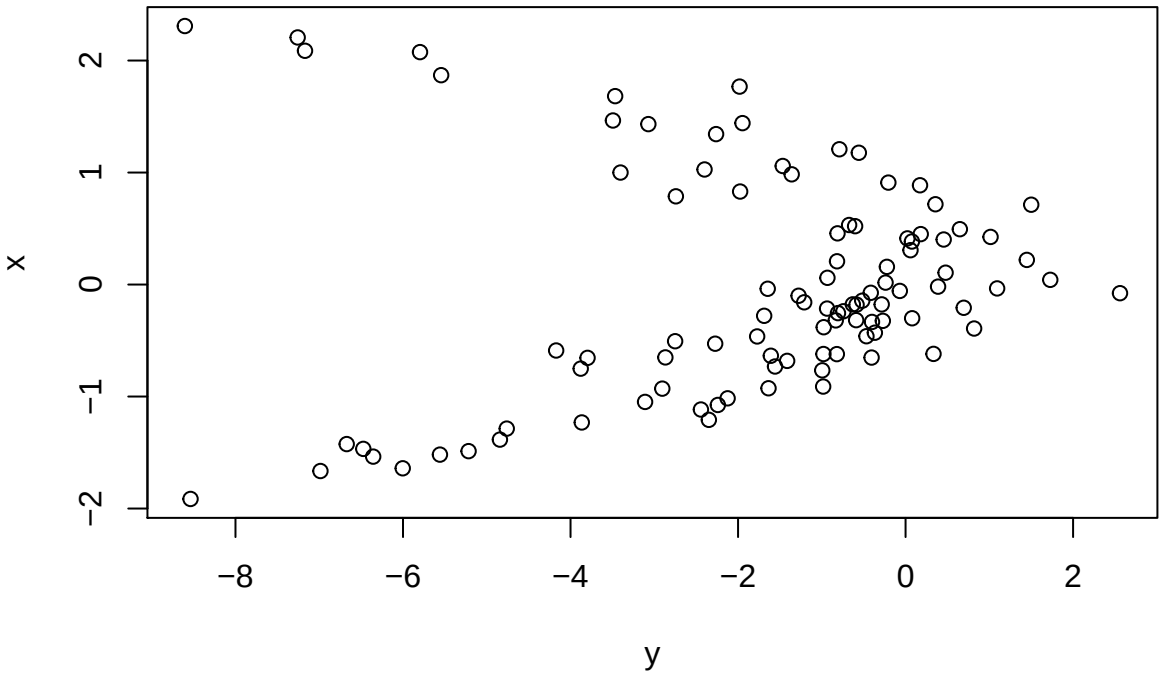
8)

A)

`r set.seed(1) y=rnorm(100) x=rnorm(100) y=x-2*x^2+rnorm (100)` p= 1 because it is the set.seed n= the number of observations in the plot, so rnorm(100)

B)

`r plot(x~y)`



It is a bell curve along the X-axis with the mean roughly in the middle at x = 0

C) set.seed(1) glm.fit = glm(y~x, data = y) cv.err = cv.glm(y, glm.fit) names(cv.err)

set.seed(34) glm.fit = glm(y~x, data = y) cv.err = cv.glm(y, glm.fit) names(cv.err)