ISLR: Nonlinear functions quiz

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Introduction

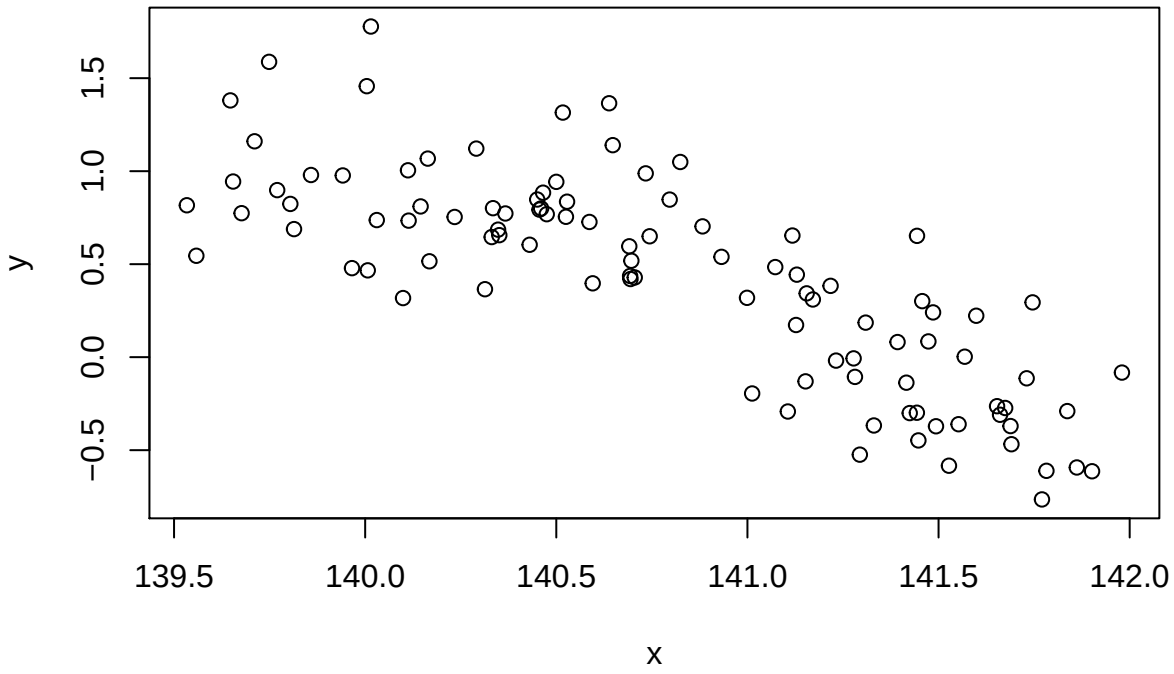
Download the file `7.R.RData` and load it into R using the `load` function.

```
data_address <- "https://lagunita.stanford.edu/c4x/HumanitiesSciences/StatLearning/asset/7.R.RData"
download.file(data_address, paste0(getwd(), "/R"))
```

7.R.R1

Load the data from the file `7.R.RData`, and plot it using `plot(x,y)`. What is the slope coefficient in a linear regression of y on x (to within 10%)?

```
load(path.expand("~/R/Statistical-Learning/data/7.R.RData"))
plot(x,y)
```




```
model_71 <- lm(y ~ x)

summary(model_71)
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.71289 -0.26943 -0.02448  0.21068  0.83582
##
```

```
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 95.43627    7.14200   13.36   <2e-16 ***
## x           -0.67483    0.05073  -13.30   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3376 on 98 degrees of freedom
## Multiple R-squared:  0.6436, Adjusted R-squared:   0.64
## F-statistic:   177 on 1 and 98 DF,  p-value: < 2.2e-16
```

7.R.R2

For the model $y \sim 1 + x + x^2$, what is the coefficient of x (to within 10%)?

```
model_72 <- lm(y ~ I(x) + I(x^2))

summary(model_72)
```

```
##
## Call:
## lm(formula = y ~ I(x) + I(x^2))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.65698 -0.18190 -0.01938  0.16355  0.86149
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -5.421e+03  1.547e+03  -3.505 0.000692 ***
## I(x)         7.771e+01  2.197e+01   3.536 0.000624 ***
## I(x^2)      -2.784e-01  7.805e-02  -3.567 0.000563 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3191 on 97 degrees of freedom
## Multiple R-squared:  0.6849, Adjusted R-squared:  0.6784
## F-statistic: 105.4 on 2 and 97 DF,  p-value: < 2.2e-16
```