R Material for Chapter 06

Multiple Predictor Regression:

```
> attach(sales.data)
> reg < - lm(sales~ young + income)   ## fits the regression model for response (sales) as a
                                      ## linear function of the two variables (young) and
                                      ## (income) plus an intercept.

> summary(reg)
> anova(reg)
> confint(reg)
> res < - residuals(reg)
> fit < - fitted(reg)      ## the fitted values are stored, ie the Y hat (subi)'s
> qqnorm(res)
> predict(reg, newdata=data.frame(young=50,income=18), se.fit=TRUE,
   interval="confidence")    ##  This estimates the average sales at young=50 and
                             ##  income=18.  It includes a 95% confidence interval
                             ##  for this average

> predict(reg, newdata=data.frame(young=50,income=18), se.fit=TRUE,
   interval="predict")       ##  This predicts a new sales response at young=50
                             ##  and income=18. It includes a 95% prediction
                             ##  interval for a new response at young=50 and
                             ##  income=18.
```

Fitting a Polynomial Model:

```
> attach(hours)
> reg2 < - lm(hours~lotsize)   ## Fits the SLR model of hours as a linear function of
                               ## lotsize.

> summary(reg2)

> sqls < - lotsize*lotsize     ## Creates a new variable that contains the squares of the
                               ## lotsizes.

> reg3 < - lm(hours~ lotsize + sqls)  ##Fits a quadratic equation in lotsize

> summary(reg3)

> culs < - sqls*lotsize        ## Creates a new variable that contains the cubes of the
                               ## lotsizes.

> reg4 < - lm(hours~ lotsize + sqls + culs)  ## Fits a cubic equation in lotsize

> summary(reg4)
```