**R code Sheet**

objects()

load("~/Documents/STAT\_201\_B/Homework/HW6/berkhousing.RData")

objects()

head(berkhousing)

dim(berkhousing)

berkhousing = berkhousing[-63,]

dim(berkhousing)

## Question 3(a)

install.packages("fields")

k\_n\_n <- function(x, y, xseq, k){

require(fields)

dmat <- rdist(x, xseq)

indices <- order(dmat)[1:k]

return(mean(y[indices]))

}

kseq = 1:(dim(berkhousing)[1]-1)

k\_n\_n.risk = sapply(kseq, FUN=function(k){

sum((berkhousing$price-

sapply(1:dim(berkhousing)[1],

FUN=function(i){

k\_n\_n(x=berkhousing$sqft[-i],

y=berkhousing$price[-i],

xseq=berkhousing$sqft[i],

k=k)

}))^2)

}

)

kseq[which(k\_n\_n.risk==min(k\_n\_n.risk))]

## Question 3(b)

n\_w\_k.risk <- function(h, x, y){

require(fields)

dmat <- rdist(x)

K <- dnorm(dmat/h)

rhat <- sapply(1:length(x), function(j){

sum(K[,j]/sum(K[,j])\*y)

})

sum((y-rhat)^2 / (1-dnorm(0)/apply(K, 1, sum))^2)

}

h\_opt <- optimize(n\_w\_k.risk, lower=0.00001,

upper=diff(range(berkhousing$sqft)), x=berkhousing$sqft,

y=berkhousing$price)$min

n\_w\_k.risk(h=h\_opt, x=berkhousing$sqft, y=berkhousing$price)







