#Marignal model plots

profsalary <- read.delim("C:/Teaching@cofc/Math 550/Chapter 5/profsalary.txt")

attach(profsalary)

library(alr4)

m1 <- lm(Salary~Experience)

par(mfrow=c(1,1))

mmp(m1,ylab="Salary")

m2 <- lm(Salary~Experience + I(Experience^2))

mmp(m2,ylab="Salary")

defects <- read.delim("C:/Teaching@cofc/Math 550/Chapter 6/defects.txt")

attach(defects)

m1 <- lm(Defective ~ Temperature+Density+Rate)

loessfit1 <- loess(Defective ~ Temperature,degree=1,span=2/3)

loessfit2 <- loess(m1$fitted.values ~ Temperature,degree=1,span=2/3)

xx <- seq(min(Temperature),max(Temperature),length=100)

par(mfrow=c(1,2))

plot(Temperature,Defective,xlab="Temperature, x1", ylab="Defective, Y")

lines(xx,predict(loessfit1,data.frame(Temperature=xx)))

plot(Temperature,m1$fitted.values,ylab=expression(hat(Y)),xlab="Temperature, x1")

lines(xx,predict(loessfit2,data.frame(Temperature=xx)))

#combined in one

par(mfrow=c(1,1))

plot(Temperature,Defective,xlab="Temperature, x1", ylab="Defective, Y")

lines(xx,predict(loessfit1,data.frame(Temperature=xx)))

lines(xx,predict(loessfit2,data.frame(Temperature=xx)))

#based on power transformation we worked on earlier

scatterplotMatrix (~Defective+ Temperature+Density+Rate)

plot(Defective~fitted(m1))

library(alr4)

lam<-invResPlot(m1, lambda=c(-1,-1/2,-1/3,-1/4,0,1/4,1/3,1/2,1))

lam$lambda

plot(lam$RSS~lam$lambda)

transd<-sqrt(Defective)

m3<-lm(transd~ Temperature+Density+Rate)

mmps(m3,layout=c(2,3), ylab="Price")

plot(m3)