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Homework Assignment 3

```
#homework Question 3
#d

set.seed(123)
data <-mvrnorm(100, mu = c(105, 87),
            Sigma = matrix(c(5,sqrt(5),sqrt(5),5),ncol = 2, byrow = TRUE),
            empirical = TRUE)

data2 <-mvrnorm(100, mu = c(100, 90),
             Sigma = matrix(c(5,sqrt(5),sqrt(5),5),ncol = 2, byrow = TRUE),
             empirical = TRUE)


plot(data, col="red")
points(data2,col= "blue")

library(glmnet)
mod <- glmnet(data, data2, family = "binomial")

yhat <- predict(mod, data, s = 0.001)

#e
contour(data, data2, matrix(as.numeric(yhat)), levels=c(1,2), add=TRUE, drawlabels=FALSE)


#question 4



can_data<-read.csv("CANdata.csv", header= TRUE)

y <-can_data[can_data$Type=="CAN",]

x <-can_data[can_data$Type=="Normal.Allograft",]
yi<-as.matrix(y)
xi<-as.matrix(x)
```

```
y$Type<-NULL
x$Type<-NULL


m <- sapply(y,function(x){ as.integer(intToBits(x))})


yi<-as.matrix(m)
xi<-as.matrix(x)
total=matrix(0.0,4,10)
xi2 = rbind(xi,total)

fit<-glmpath(xi2,yi)
summary.fit<-summary(fit)
summary.fit
#Df Deviance      AIC      BIC
#Step 1   1 596.1084 598.1084 602.2440
#Step 2   2 557.4779 561.4779 569.7491
#Step 3   3 557.1828 563.1828 575.5895
#Step 4   4 544.5390 552.5390 569.0813
#Step 5   5 506.5152 516.5152 537.1930
#Step 6   6 487.0356 499.0356 523.8489
#Step 9   7 478.4425 492.4425 521.3915
#Step 10  8 473.2679 489.2679 522.3524
#Step 13  9 472.1678 490.1678 527.3879
#Step 14 10 472.1400 492.1400 533.4957

model.select<-as.numeric(gsub("Step ","",
rownames(summary.fit))[which.min(summary.fit$AIC)])
model.select
phat<-predict(fit, newx=x, s=model.select, type="response")
head(phat)

### Classifier
class<-ifelse(phat>0.5,1, 0)
table(class, y)

### Misclassification?
(42+77)/length($y)
#class   0   1
#0 260  77
#1  42  83
#> ### Misclassification?
```

#[1] 0.2575758