Exercise6

* p(X)=exp(β0+β1X1+β2X2)1+exp(β0+β1X1+β2X2)

X1=hoursstudied,X2=undergradGPA

β0=−6,β1=0.05,β2=1

X=[40hours,3.5GPA]

p(X)=exp(−6+0.05X1+X2)1+exp(−6+0.05X1+X2)=exp(−6+0.0540+3.5)1+exp(−6+0.0540+3.5)=exp(−0.5)1+exp(−0.5)=37.75%

Exercise8

Logistic regression: 20% training error rate, 30% test error rate KNN(K=1): average error rate of 18%

For KNN with K=1, the training error rate is 0% because for any training observation, its nearest neighbor will be the response itself. So, KNN has a test error rate of 36%. I would choose logistic regression because of its lower test error rate of 30%.

Exercise9

p(X)1−p(X)=0.37p(X)=0.37(1−p(X))1.37p(X)=0.37p(X)=0.371.37=27%

odds=p(X)1−p(X)=.16/.84=0.19