Question 2:

w0 = [-0.02946673] w1 = [[-0.53187048 1.30898347]] mean accuracy= 0.821

The number of predicted positives (i.e., points predicted to be in class 1) = 6800.0

The number of predicted negatives (i.e., points predicted to be in class 0) = 13200.0

The number of true positives (i.e., predictions for class 1 that are correct) = 6484.0

The number of false postives (i.e., predictions for class 1 that are incorrect) = 316.0

The number of true negatives (i.e., predictions for class 0 that are correct) = 9684.0

The number of false negatives (i.e., predictions for class 0 that are incorrect) = 3516.0

The recall = 64.84

The precision = 95.3529411765

The area under precision/recall curve 0.780127445081

Question 3:

mean accuracy of training data 93.49333333333333

mean accuracy of testing data 92.56

best k = 3

best mean = 0.9705

Question 5:

softmax1 (0,0) = [0.5 0.5]

softmax1 (1000,0) = [nan 0.]

softmax1 (-1000,0) = [0. 1.]

softmax2 (0,0) = (array([0.5, 0.5]), array([0.30685282, 0.30685282]))

softmax2 (1000,0) = (array([1., 0.]), array([1., 0.]))

softmax2 (-1000,0) = (array([0., 1.]), array([0., 1.]))

Question 6: I don't know

Question 7: I don't know