实验二

**function g = sigmoid(z)**

计算自变量为z的sigmoid函数值

代码：

g = 1 ./ (1 + exp(-z));

**function [J, grad] = costFunction(theta, X, y)**

计算无正则项的逻辑回归的损失函数和对theta的偏导数

代码：

hypothesis = sigmoid(X \* theta);

J = -1 / m \* sum( y .\* log(hypothesis) + (1 - y) .\* log(1 - hypothesis) );

grad = 1 / m \* X' \* (hypothesis - y);

% notes：

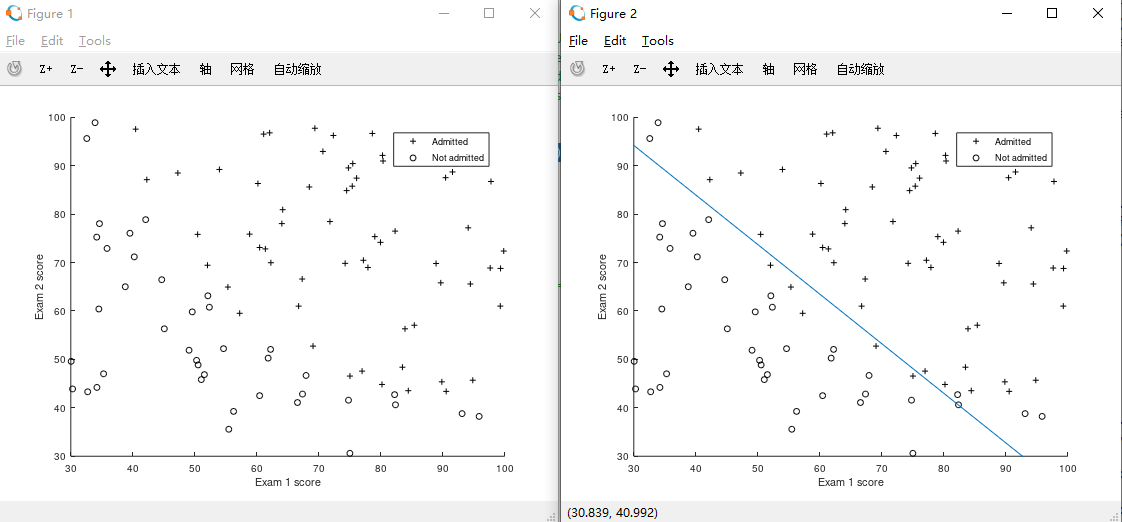
**function p = predict(theta, X)**

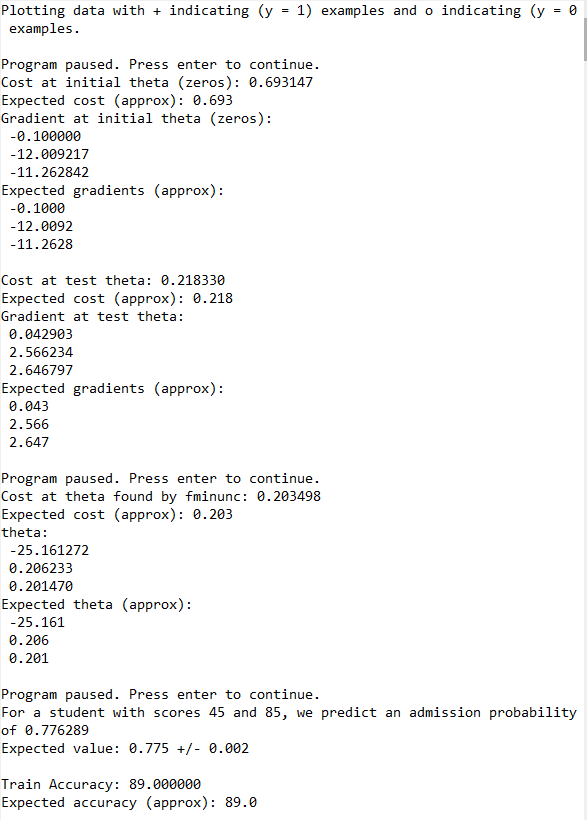
给定theta和标准化过的X，预测二分类结果

代码：

p = round(sigmoid(X \* theta));

**ex2运行结果**





**function [J, grad] = costFunctionReg(theta, X, y, lambda)**

计算正则项系数为lambda的二范数正则的逻辑回归的损失函数和对theta的偏导数

代码：

hypothesis = sigmoid(X \* theta);

J = -1 / m \* sum( y .\* log(hypothesis) + (1 - y) .\* log(1 - hypothesis) ) ...

+ lambda / 2 / m \* (sum(theta .^ 2) - theta(1)^2);

grad = 1 / m \* X' \* (hypothesis - y) + lambda / m \* theta;

grad(1) = grad(1) - lambda / m \* theta(1);

% no need to regularize theta 0

**ex2\_reg运行结果**

