math456 hw5

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1 Question 1

data = importdata(”ex1data1.txt”)
x = data(:,1); y = data(:,2); m = length(y):
size = 150; scatter(x,y,size,’.’); xlabel(’Population of City in 10,000s’) ylabel(’ Profit in $10,000s’)
n = 97 sumx = sum(x); sumy = sum(y); xsqrd = sum(x.$\hat{}$2); ysqrd = sum(y.$\hat{}$2); sumxy = sum(x.*y);
theta1 = ((n.sumxy) - (sumx.*sumy))./((n.*xsqrd)-(sumx).$\hat{}$(2)); $theta0 = (sumy - (theta1.sumx))/n$;
a = [’Least square cost function: ’, num2str(theta0), ’+’ ,num2str(theta1), ’x’]; disp(a) b = [’Optimal theta: ’, ’theta = (’, num2str(theta0), ’,’, num2str(theta1), ’)’]; disp(b)
total35 = theta0 + (theta1.*3.5)
total35 = theta0 + (theta1.*7)
Least square function: -3.8958 + 1.193x Optimal theta = (-3.8958, 1.193) Estimated profits for 35000 people: $2,798.37 Estimated profits for 70000 people: $44,554.55

2 Question 2

data = load(’ex1data2.txt’);
x1 = data(:,1); x2 = data(:,2); y = data(:,3); m = length(y):
n1 = normalize(x1); n2 = normalize(x2); n = [n1,n2]; disp(n)
a = [ones(m,1) x1 x2]; b = regress(y,a); disp(b)
disp(’Optimal theta:’) disp(’(89597.91, 139.21, -8738.02)’)
estimate = 89597.91 + 1650.*139.21 - 8738*3
optimal theta: (89597.91, 139.21, -8738.02)
estimation for a 1650sqft house with 3 bedrooms: $293,080.41