3.1
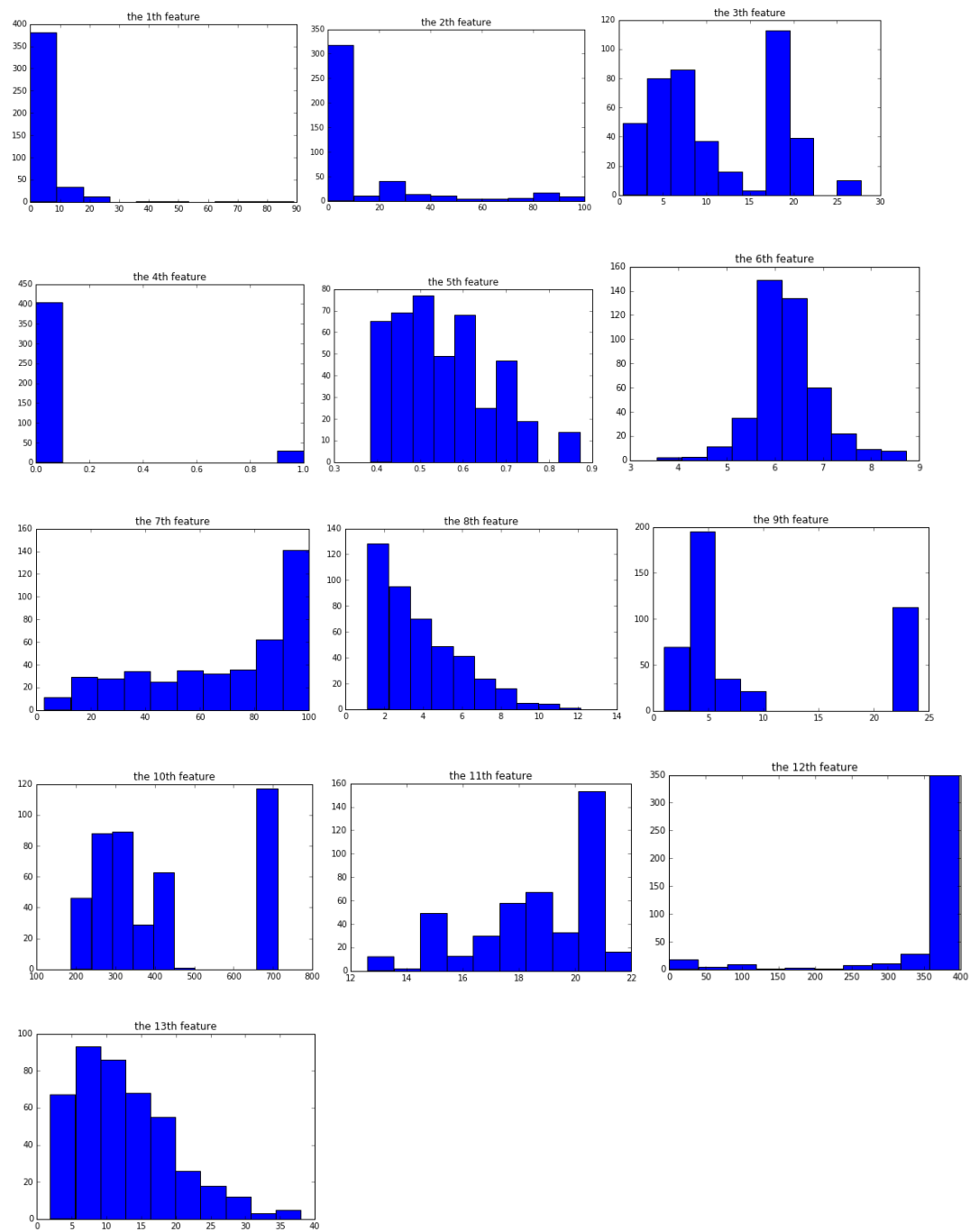
histograms

correlation:
[-0.38769699   0.3629873   -0.48306742   0.20360014 -0.42482968   0.69092333
 -0.39017911   0.25242057 -0.38549181 -0.46884939 -0.50527076   0.34343414
 -0.73996982]

3.2
linear regression's MSE
28.3816114984

lambda = 0.01, ridge regression's MSE
28.3826802369
lambda = 0.10, ridge regression's MSE
28.392317377
lambda = 1.00, ridge regression's MSE
28.4904998807

cross validation:
lambda = 0.0001, cross validation's value
22.8411624411
lambda = 0.0010, cross validation's value
22.8411510996
lambda = 0.0100, cross validation's value
22.841038157
lambda = 0.1000, cross validation's value
22.8399558887
lambda = 1.0000, cross validation's value
22.8337424309
lambda = 10.0000, cross validation's value
23.1593940895

3.3
b)
Mutual infomation's MSE:
31.6413277042

Brute-force search MSE:
30.0800030066

3.4
Polynomial feature expansion's MSE with normalization
23.7895460953