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You will implement linear regression with one variable to predict profits for a food truck. Suppose you are the CEO of a restaurant franchise and are considering different cities for opening a new outlet. The chain already has trucks in various cities and you have data for profits and populations from the cities.

You would like to use this data to help you select which city to expand to next. The file **ex1data1.txt** contains the dataset for our linear regression problem. The first column is the population of a city and the second column is the profit of a food truck in that city. A negative value for profit indicates a loss.

Use following Matlab Codes to load the data:

```
data = load('ex1data1.txt'); % read comma separated data
x = data(:, 1); y = data(:, 2);
m = length(y); % number of training examples
```

Implement linear regression for **different learning rates**, and **plot $J(\theta)$ vs iteration** number for each of them. State the convergence rule you used for the example.