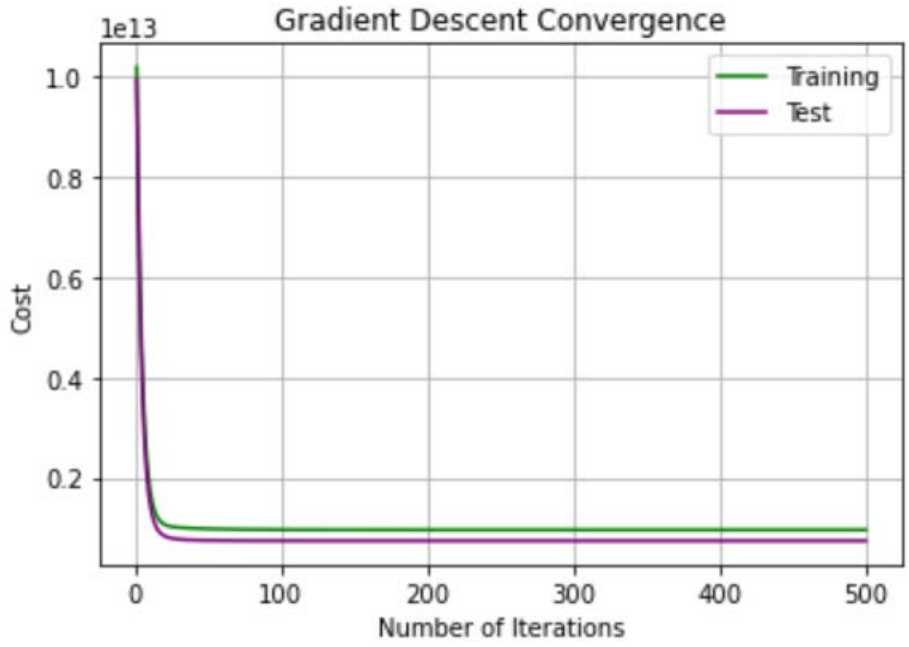
Will Woodard
801069657
ECGR 4105

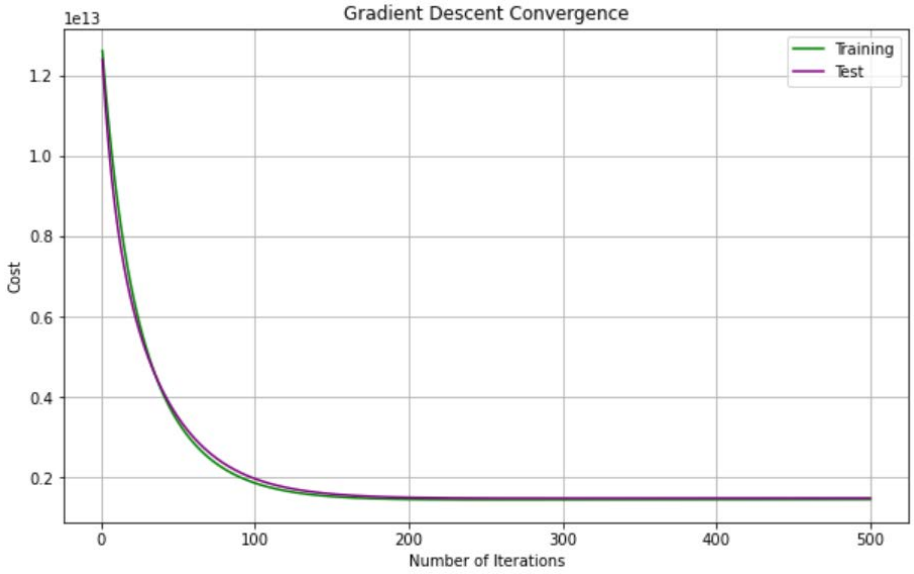
Homework 1 Report

Problem 1

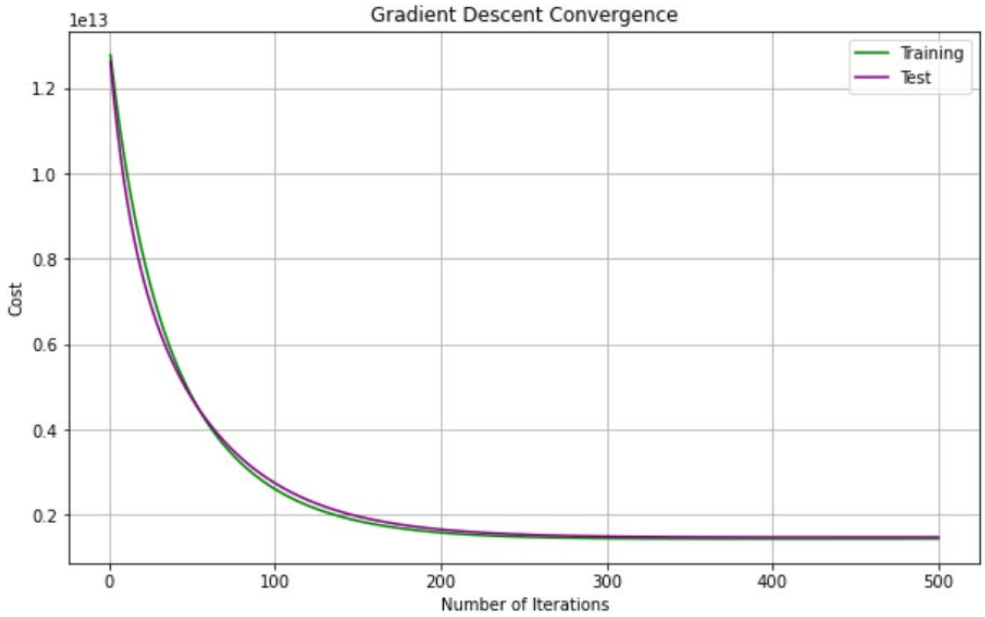
A) @ alpha = 0.1



@ alpha = 0.015

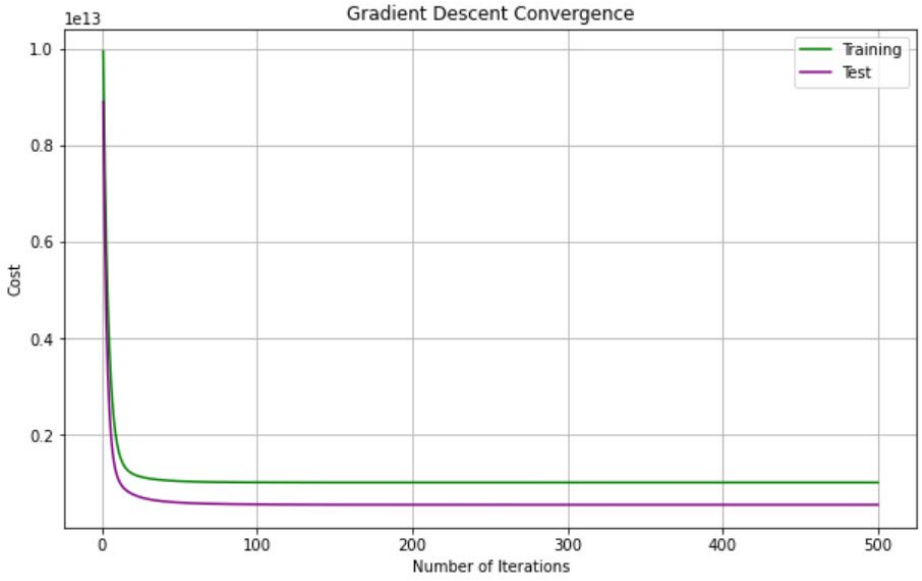


@ alpha = 0.01

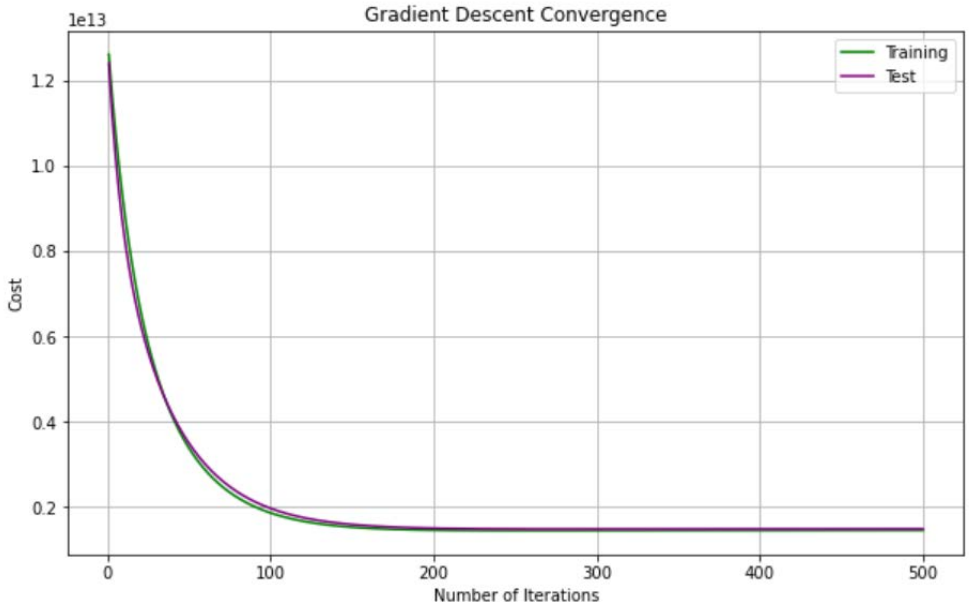


Alpha equal 0.1 fits the best as it reaches the lowest cost the quickest.

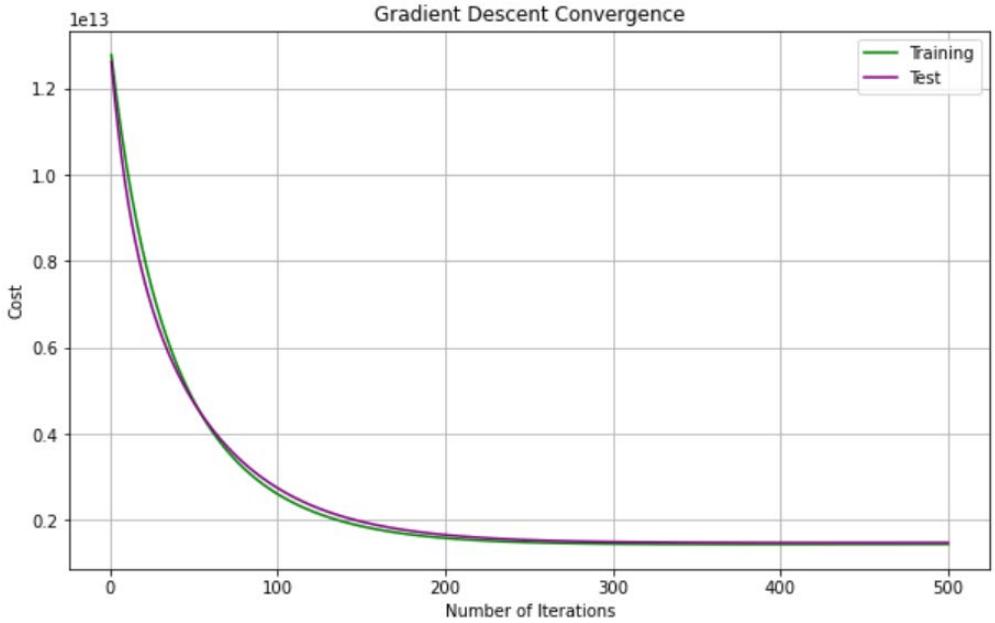
B) @ alpha = 0.1



@ alpha = 0.015



@ alpha = 0.01



Just like in part A, alpha being equivalent to 0.1 is the best fit as it reaches the lowest cost in the least amount of iterations.

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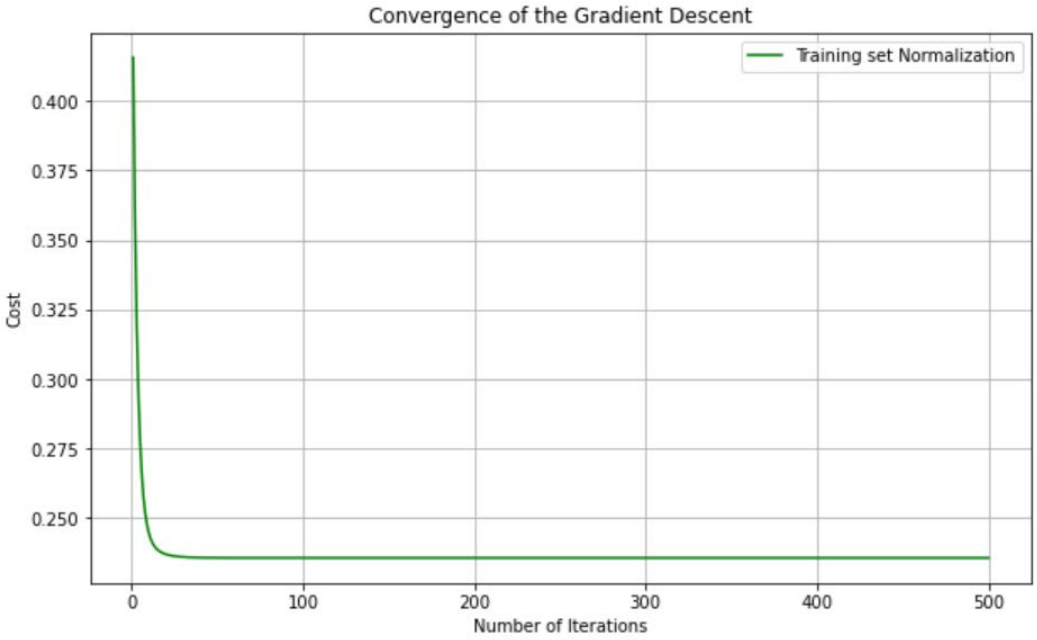
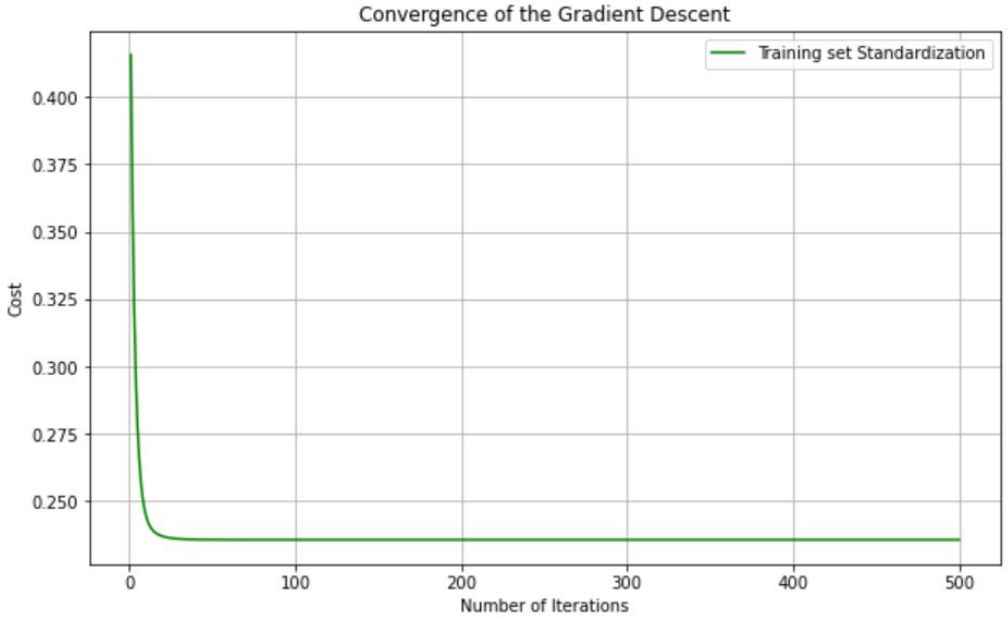
Problem 2

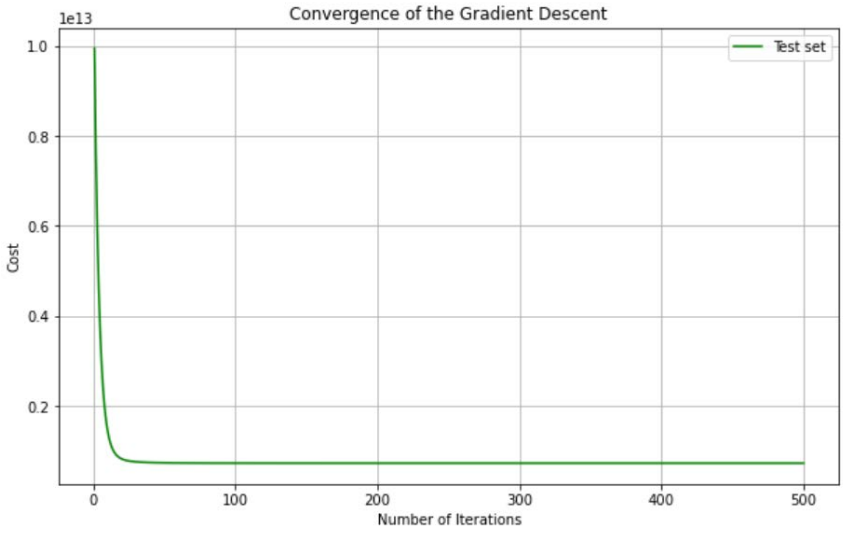
A) Normalization:



Standardization:

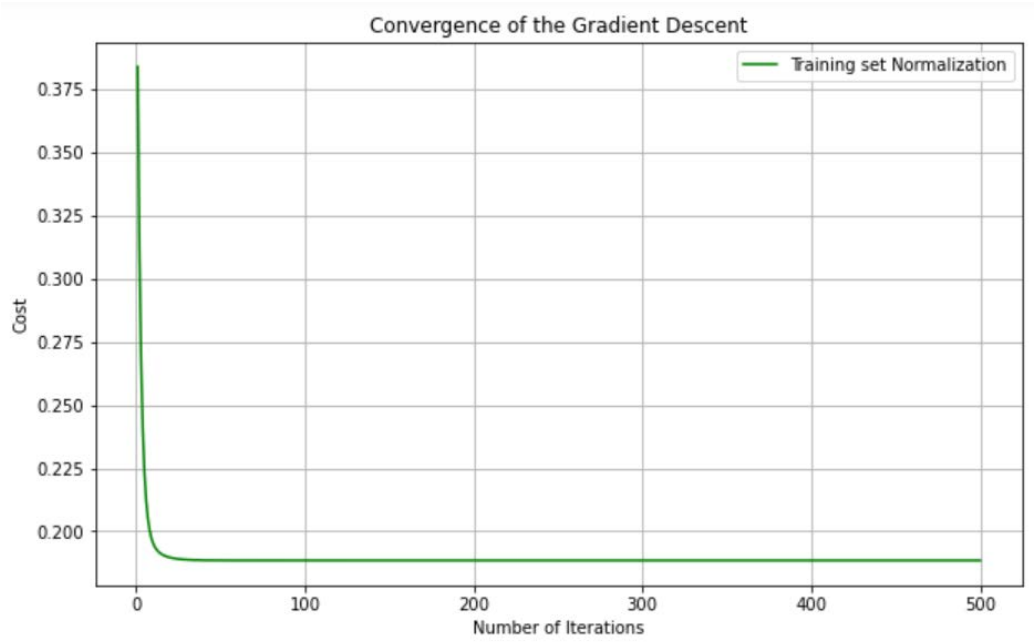


Test Set:

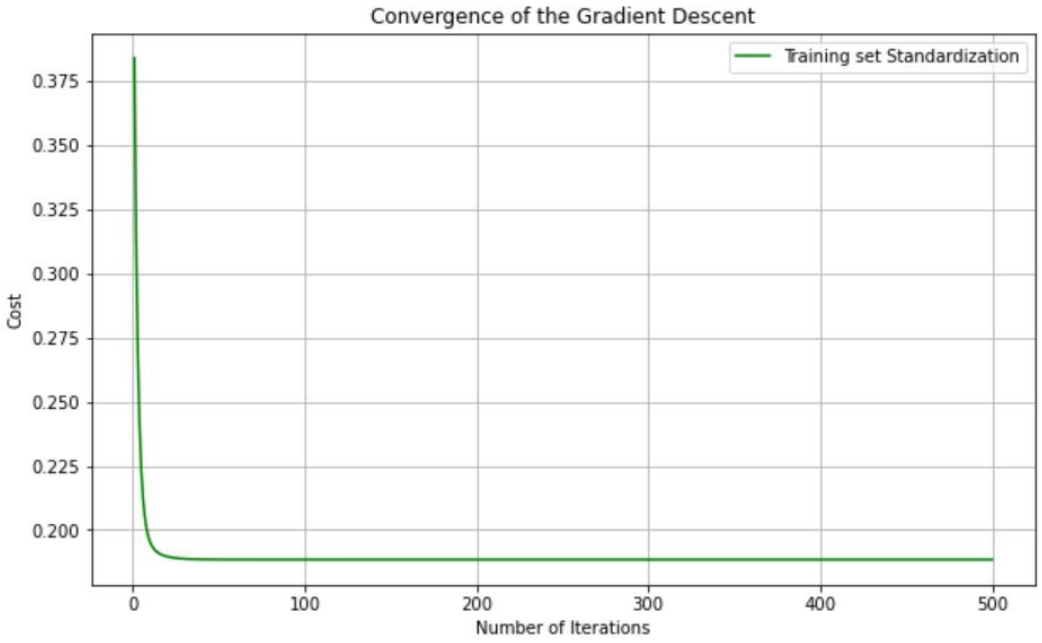


Both normalization and standardization seemed to yield very similar outcomes as they both seem to reach the lowest cost in roughly the same amount of iterations. They both seem to reach the lowest cost a little quicker than the test set.

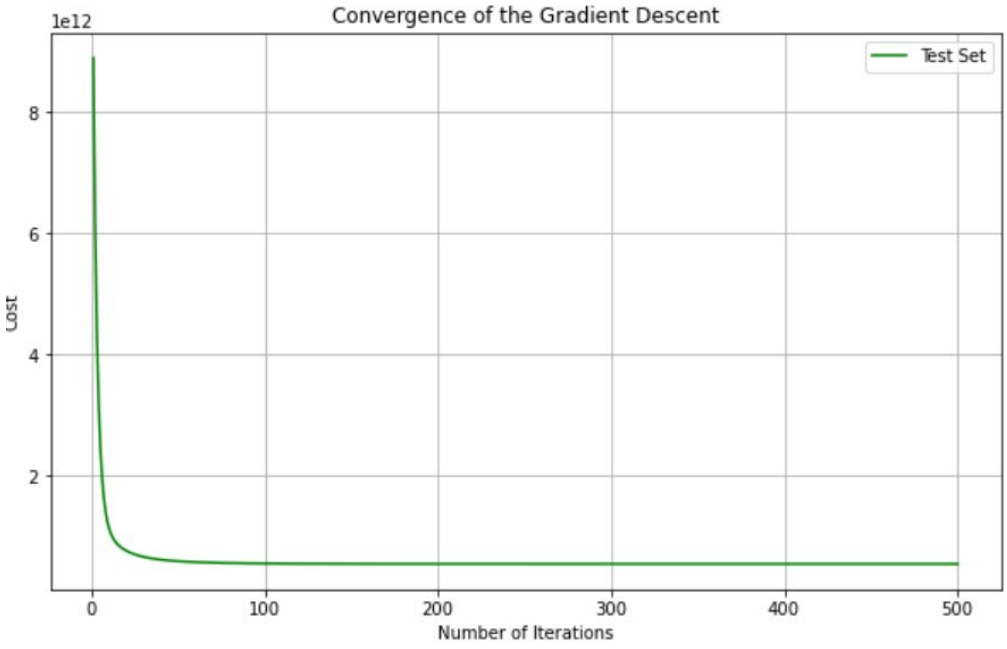
B) Normalization:



Standardization:



Test Set:



Similar to part A, both normalization and standardization perform almost identically. However, but are a significant improvement over the test set.

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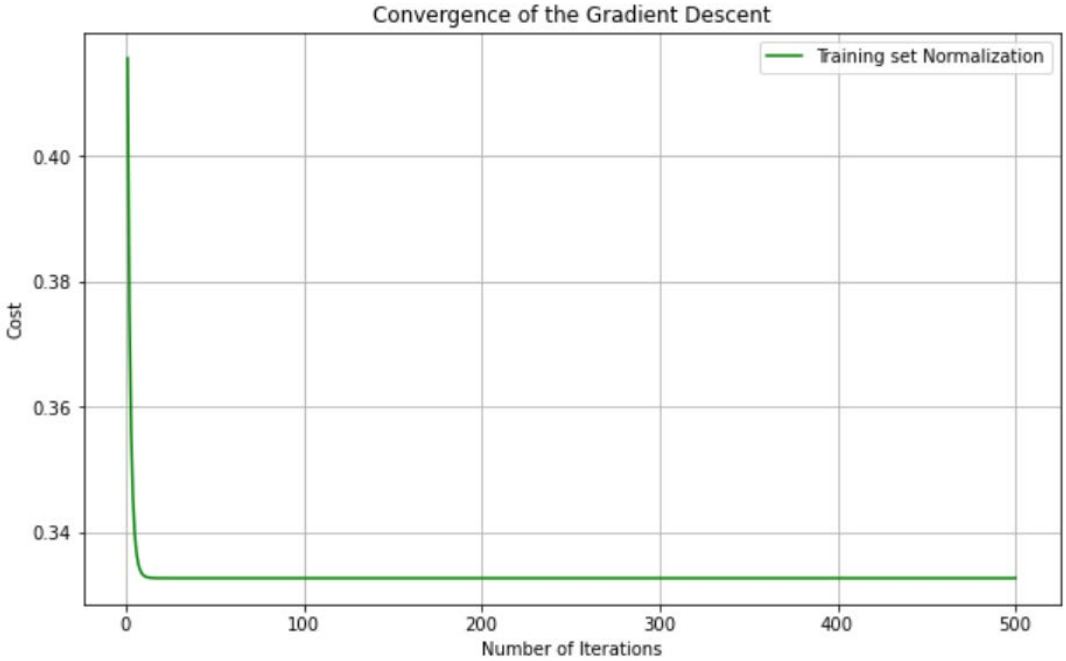
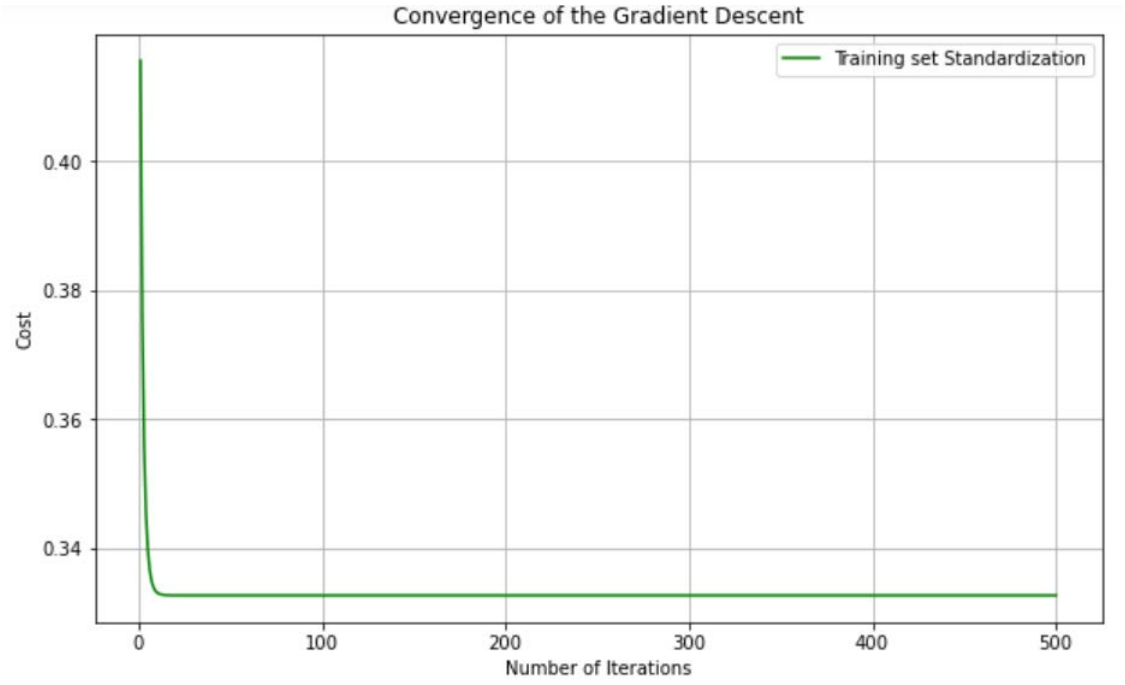
Problem 3

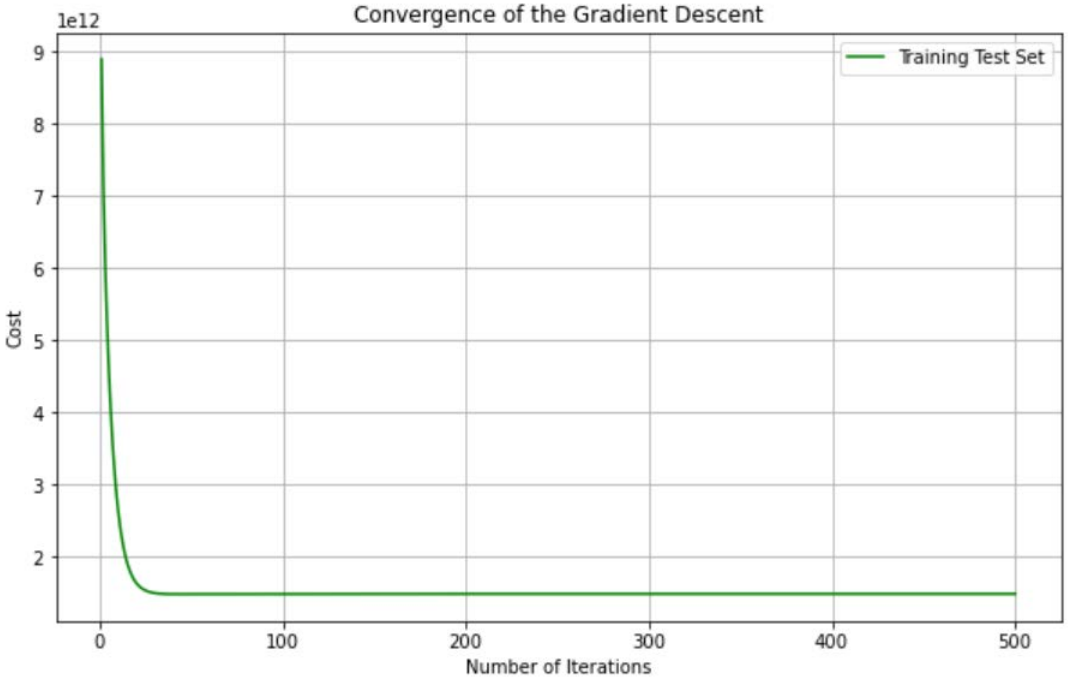
A) Normalization:



Standardization:

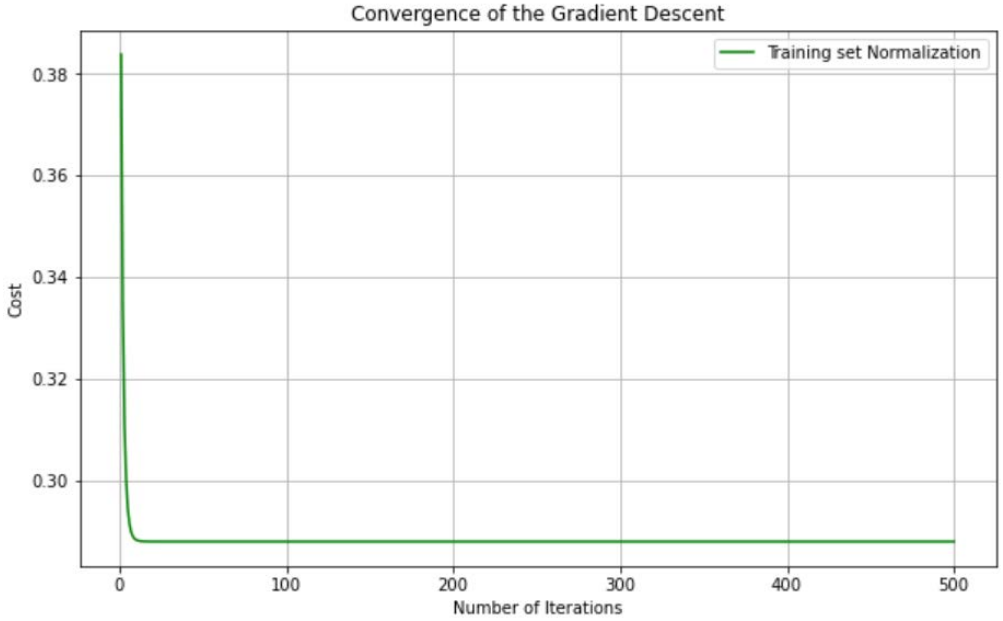


Test Set:

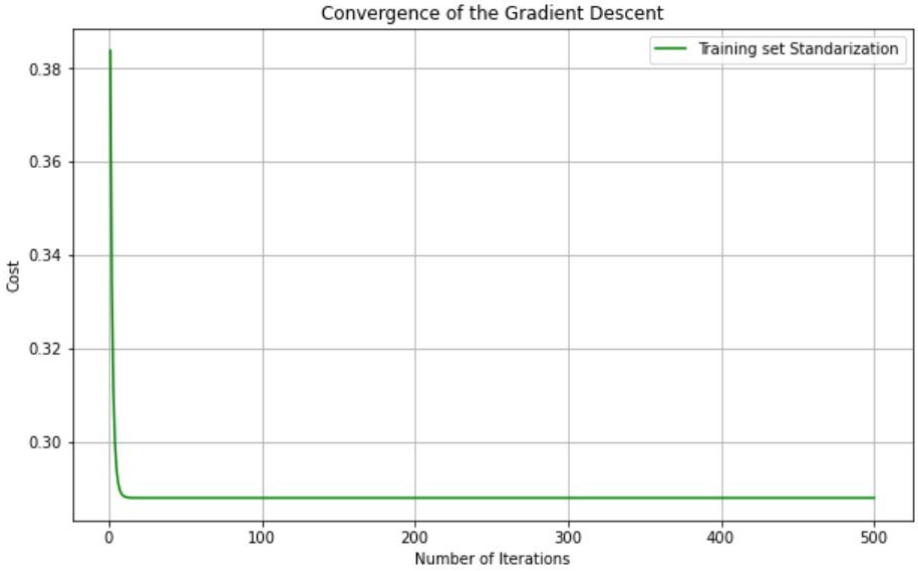


Similar to the results of problem 2A, the normalization and standardization graphs are seemingly identical. However, both normalization and standardization performed better than the test set. Also, they reached the lowest cost quick without the added parameters.

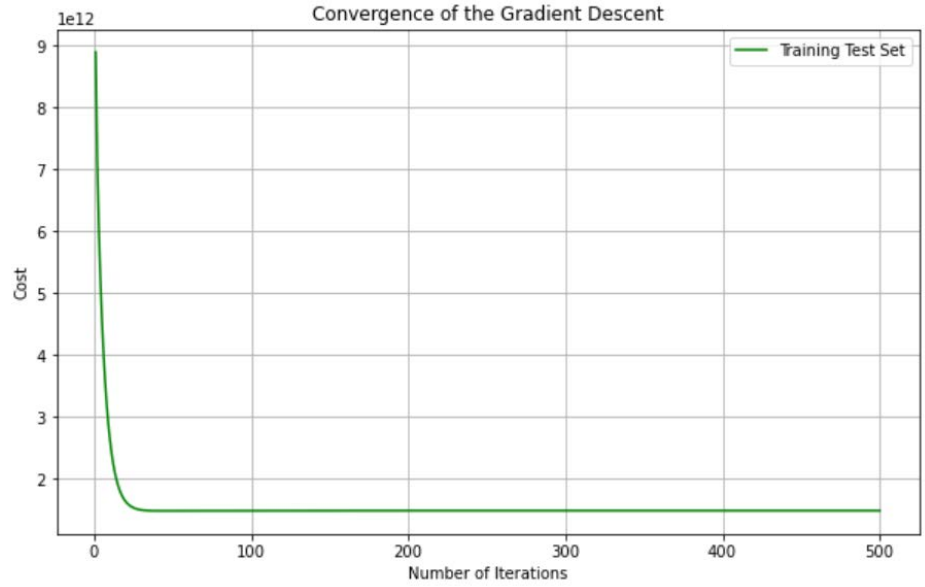
B) Normalization:



Standardization:



Test Set:



Again, similar to the results of problem 2B, both normalization and standardization perform nearly identically, and both outperform the test set. However, neither normalization or standardization reach the lowest point as quickly with the added parameters.

GitHub: https://github.com/willwoodard16/Intro-to-Ml-4105