Amrit Gill

Course : Machine Learning with Python

Task 1.3 : Optimization in Relation to Problem-Solving

Weather Station	Year	Theta0	Theta1	Iterations	Step Size
Budapest	1960	-5	-1	100	0.01
Budapest	1990	-5	-1	100	0.01
Budapest	2020	-5	-1	100	0.1
Madrid	1960	0	0	500	0.02
Madrid	1990	0	0	500	0.02
Madrid	2020	0	0	200	0.05
Stockholm	1960	0	0	150	0.1
Stockholm	1990	0	0	100	0.01
Stockholm	2020	0	0	150	0.1

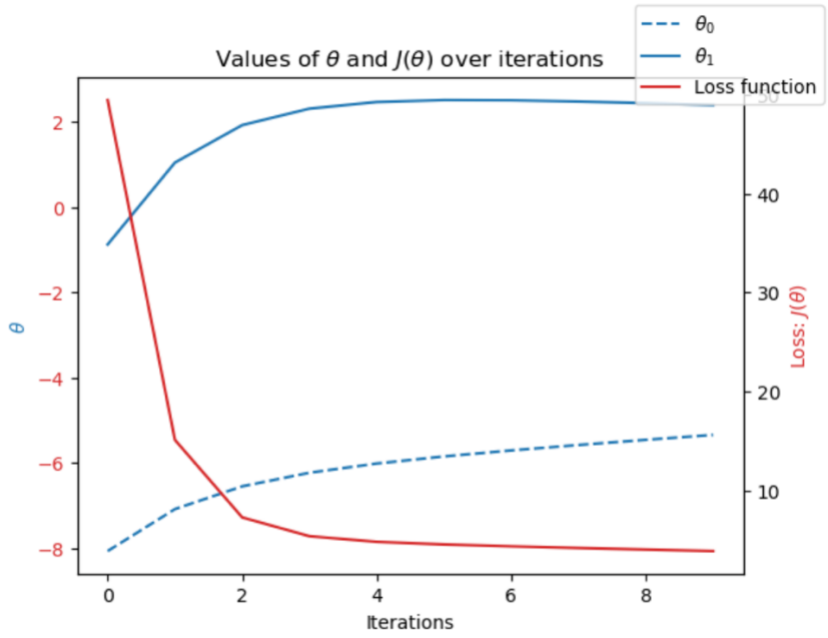
Observation about the weather station temperatures:

1. **Budapest experienced the most significant temperature rise.** The minimum daily mean temperature remained unchanged between **1960 and 1990**, but there was a **sharp increase from 1990 to 2020**.

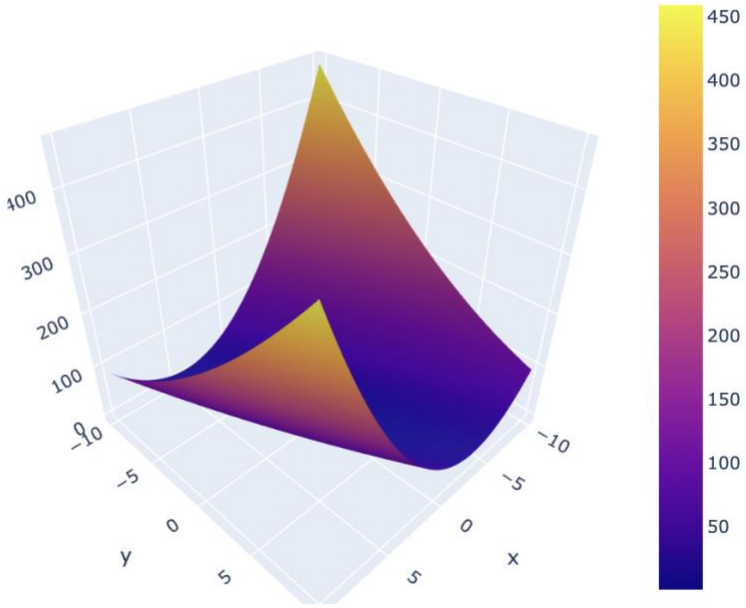
2**. Madrid showed the least temperature increase** among the three weather stations, indicating a more stable climate trend compared to Budapest and Stockholm.

3. **Stockholm also saw a temperature increase**, but not as dramatically as Budapest.

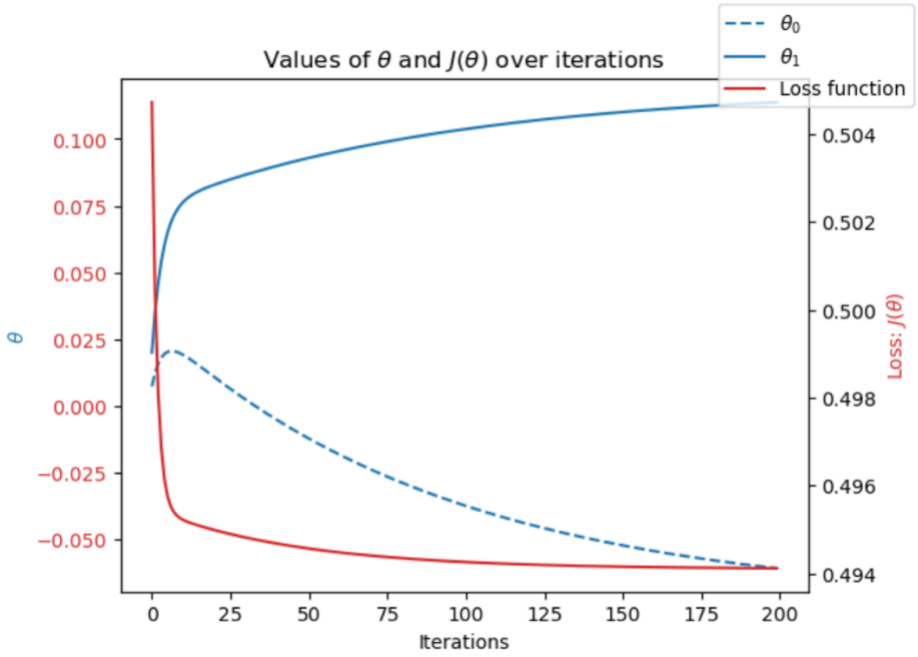
Budapest 2020



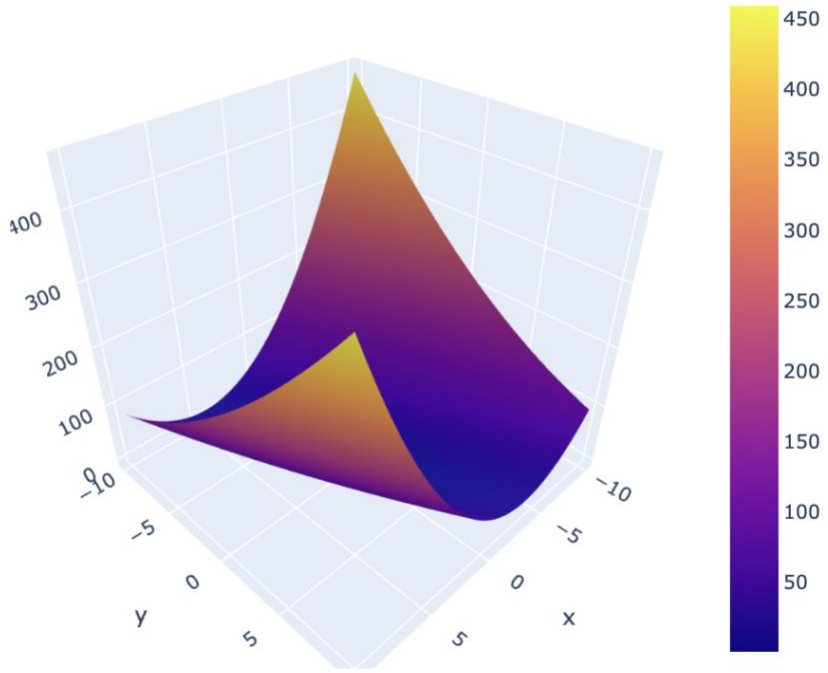
Loss function for different thetas



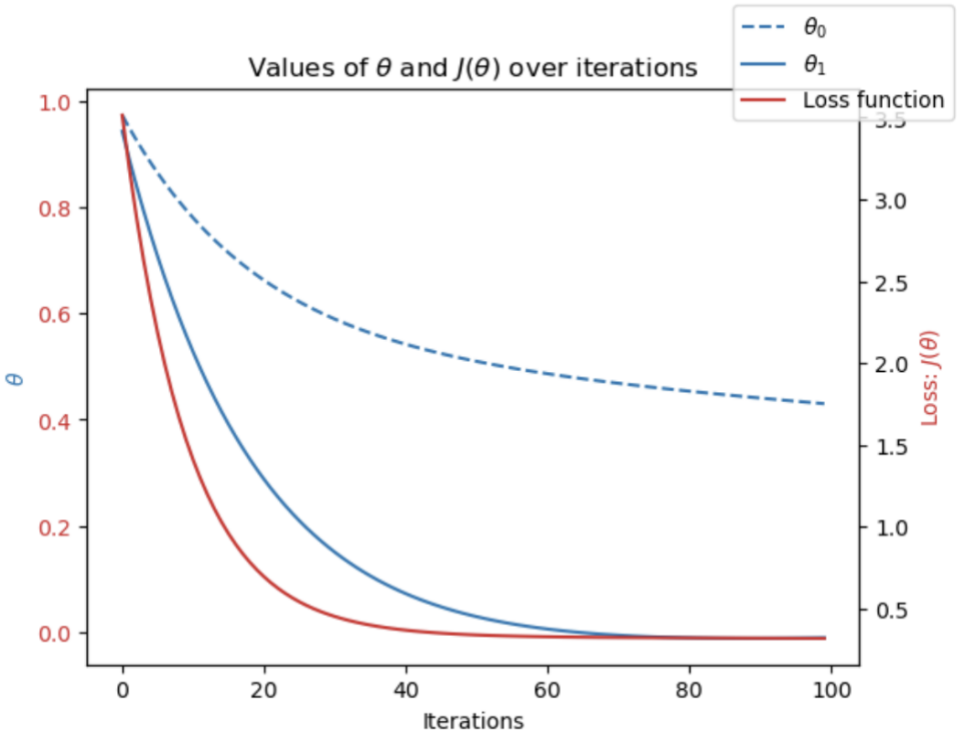
Madrid 2020



Loss function for different thetas



Stockholm 2020



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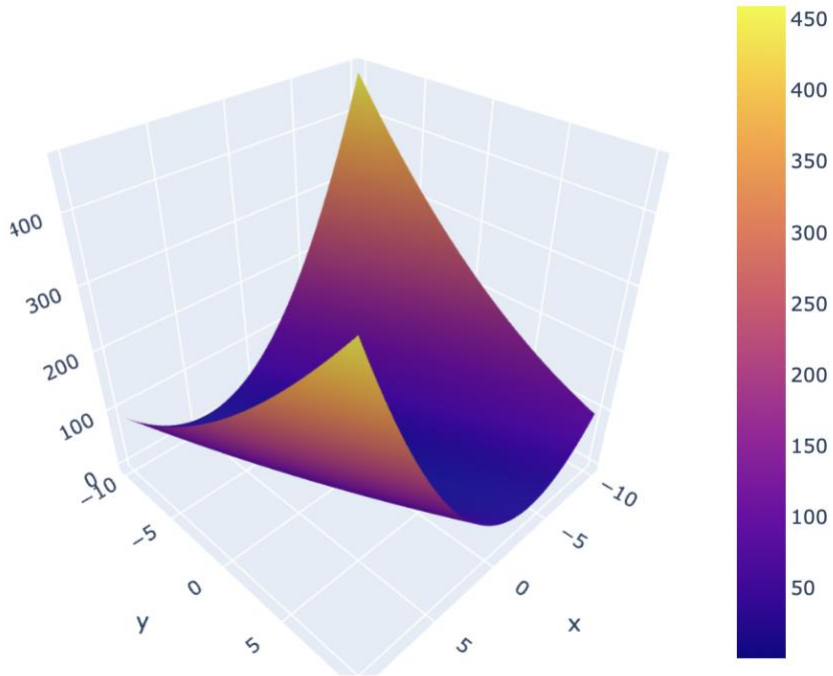
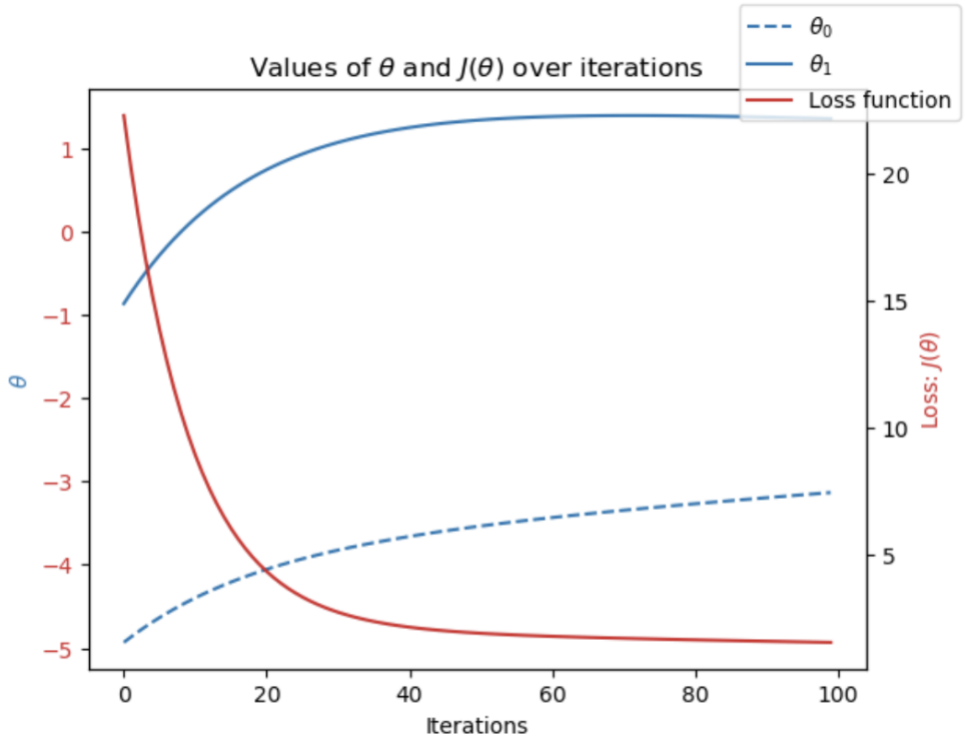
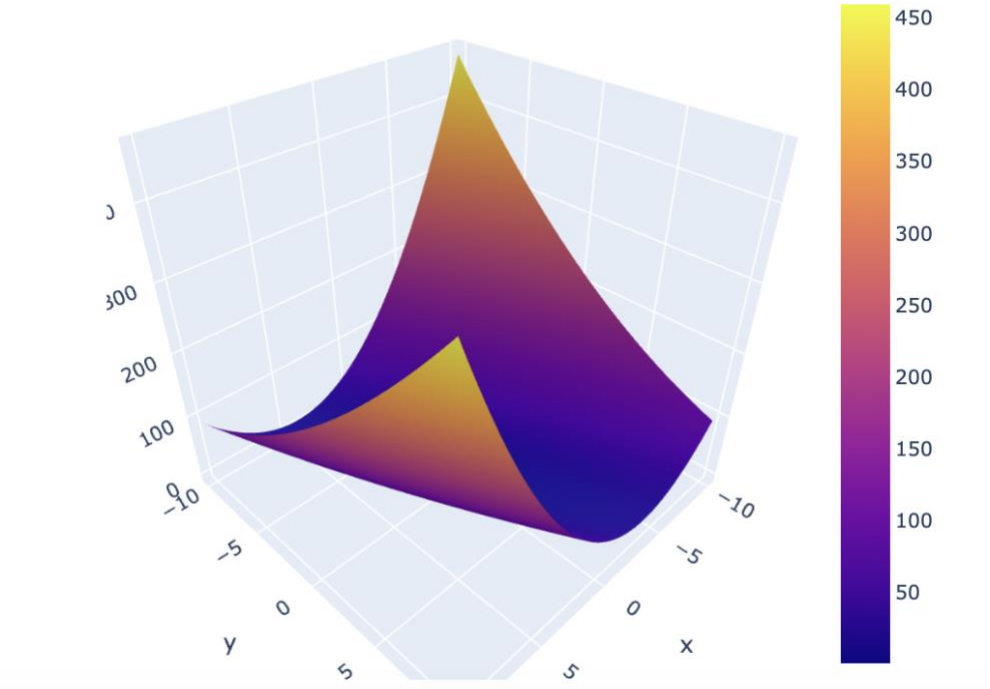


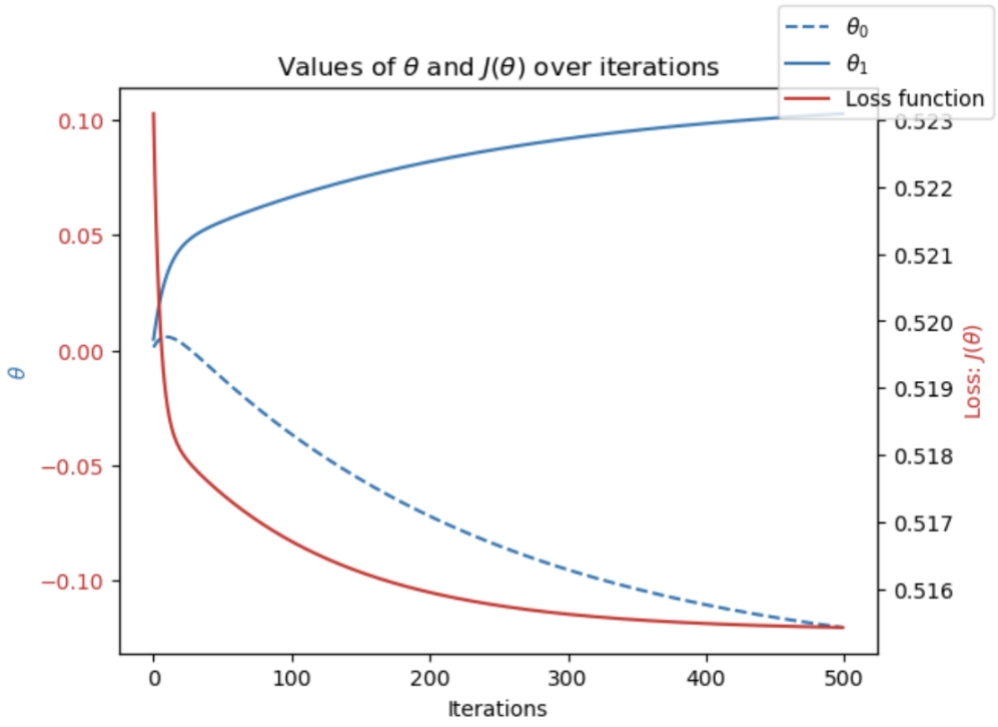
Budapest 1990



Loss function for different thetas



Madrid 1990



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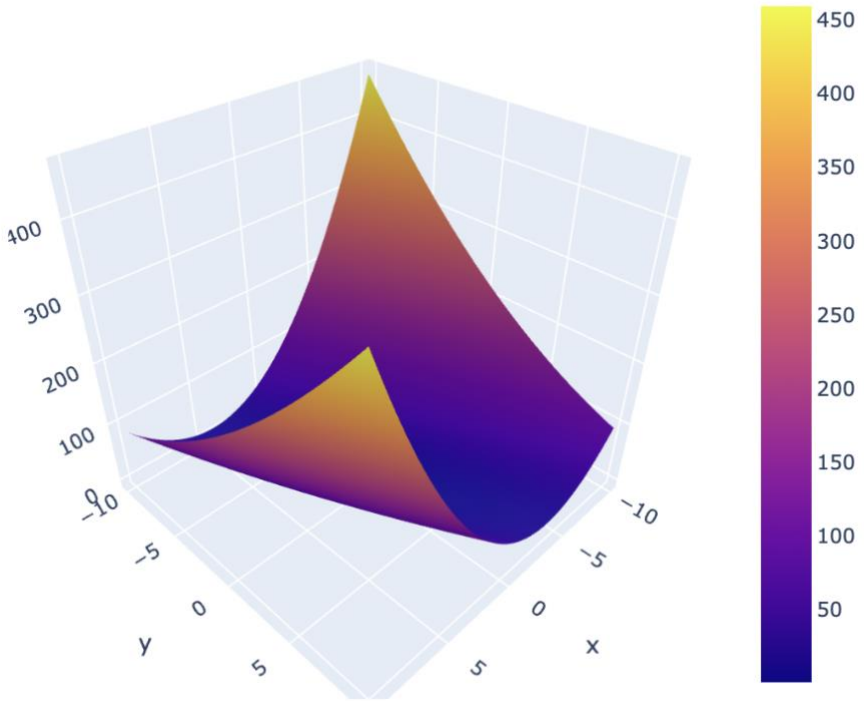
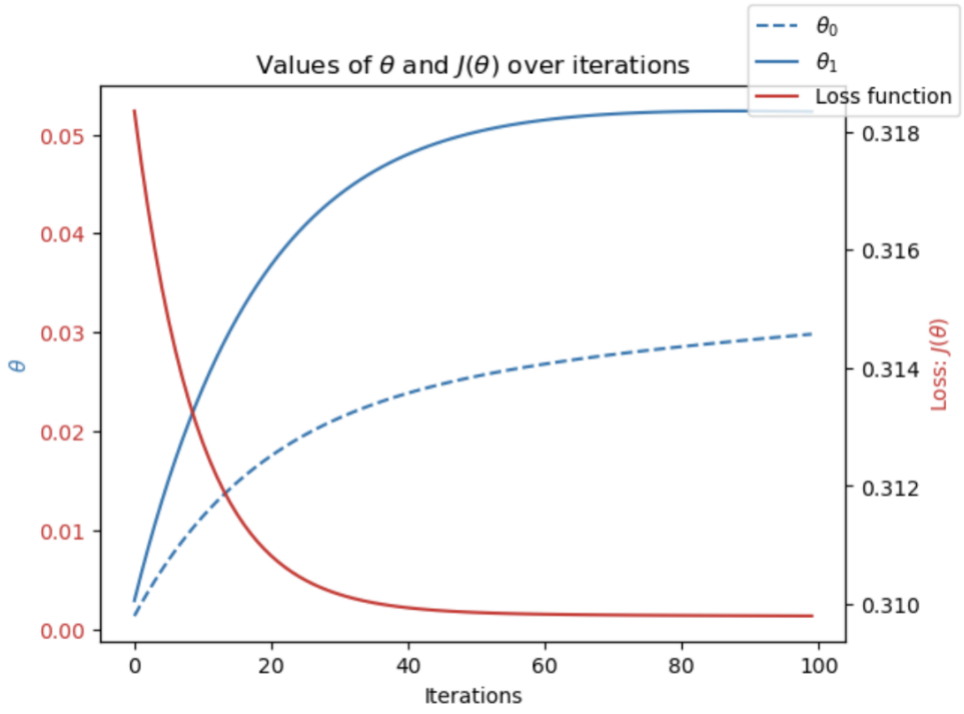


Stockholm 1990



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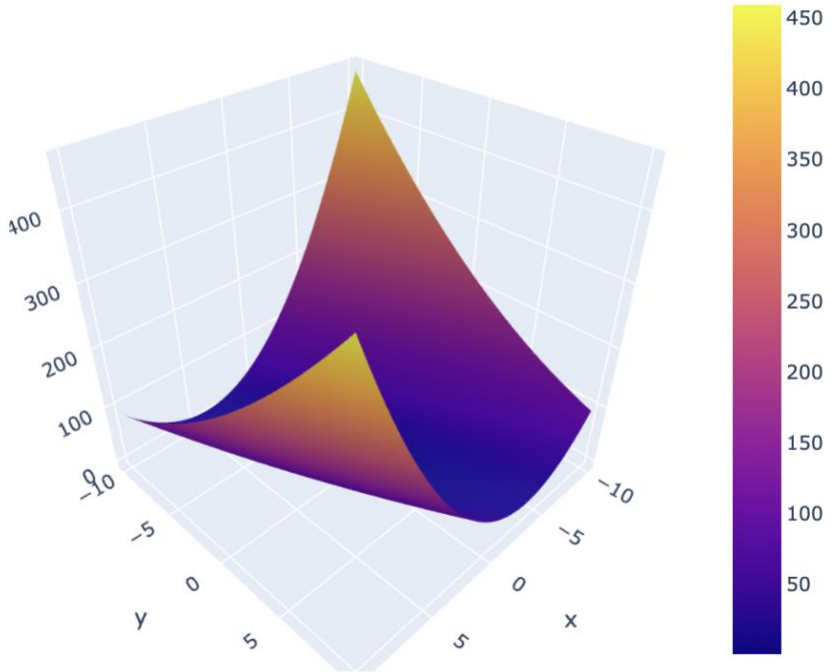
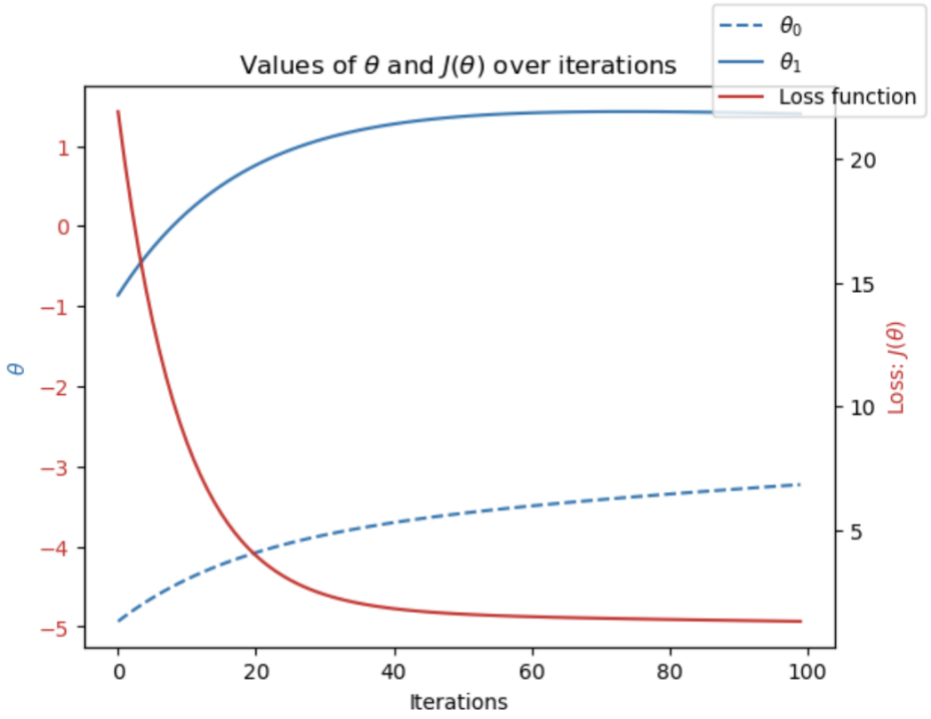


Budapest 1960



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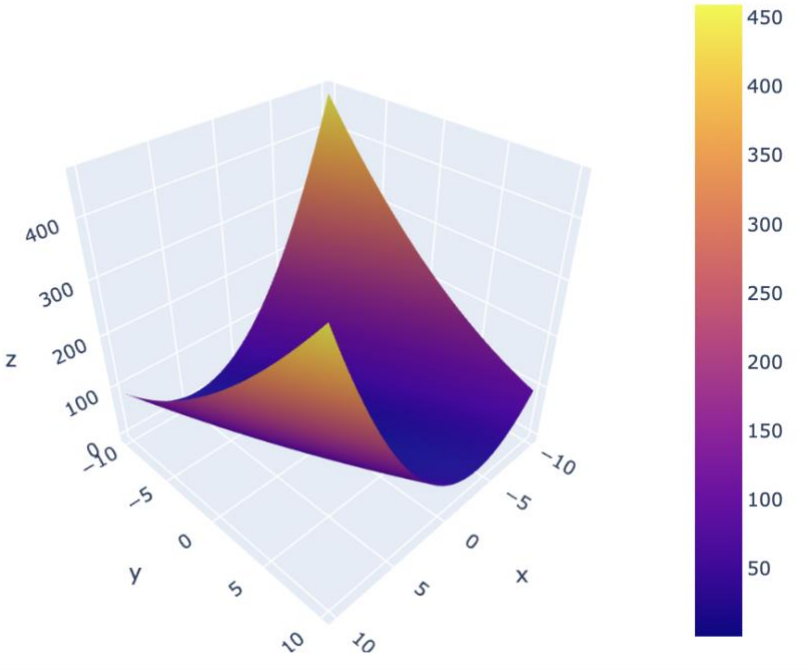
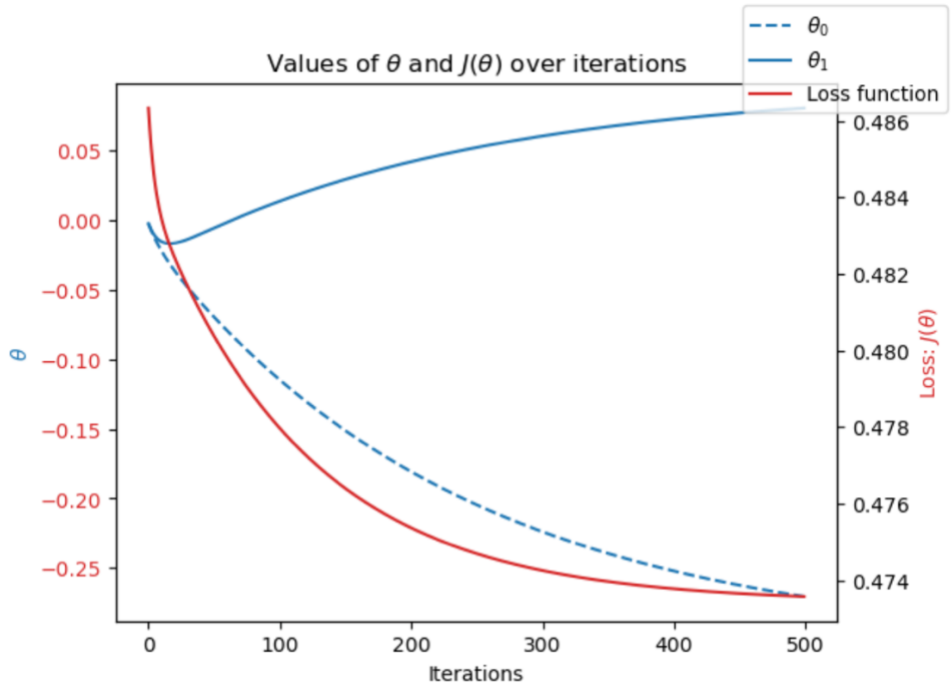


Madrid 1960



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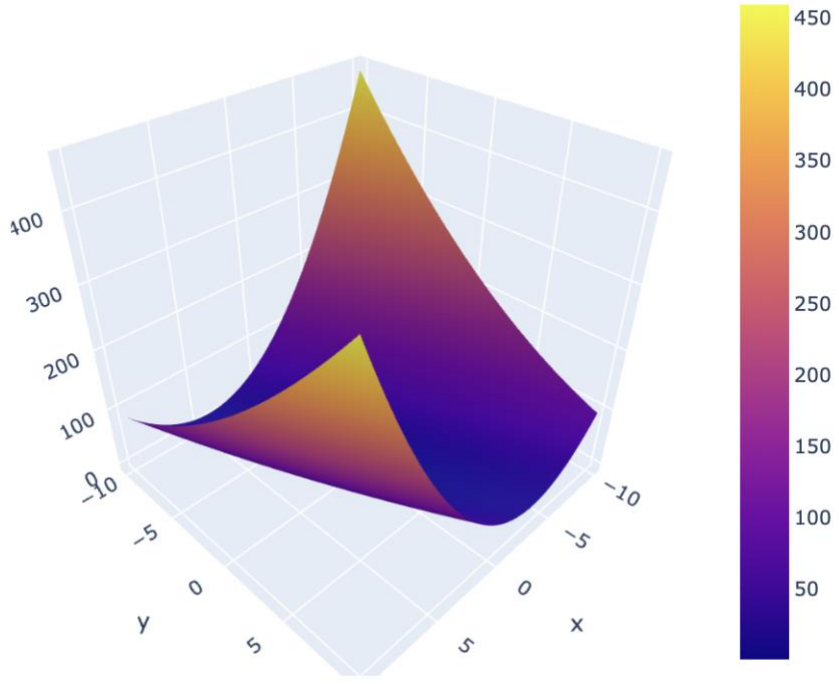
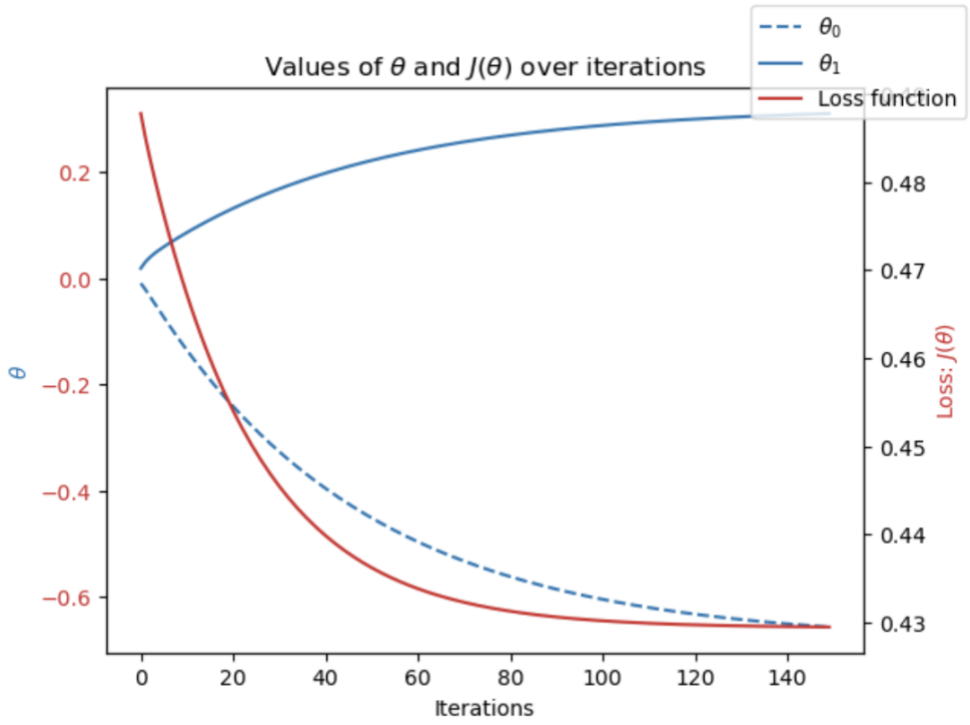


Stockholm 1960



Loss function for different thetas