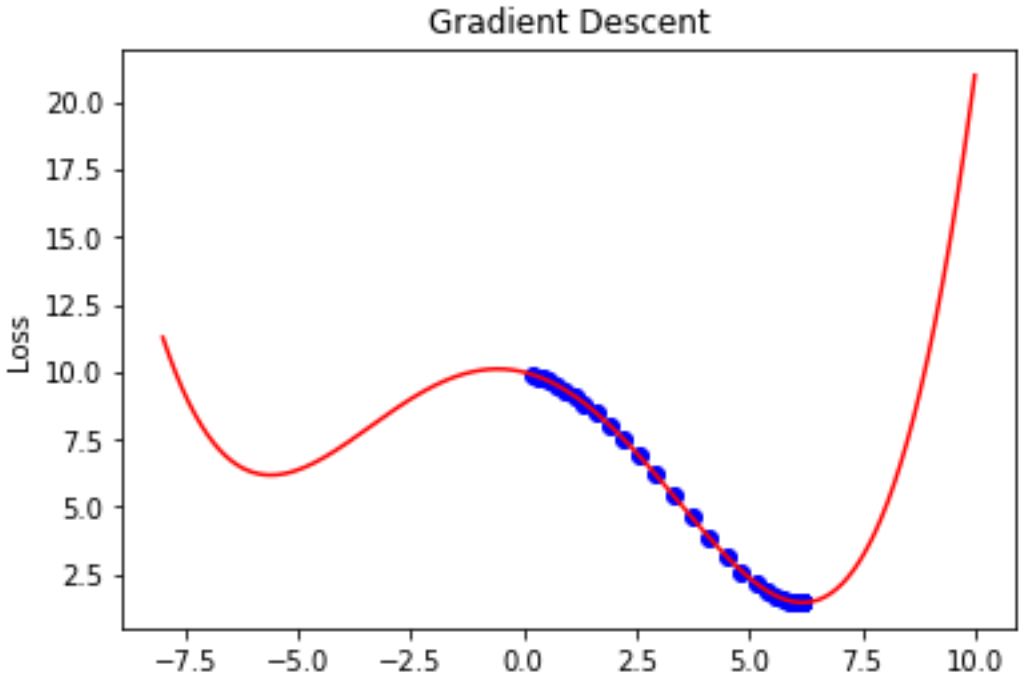
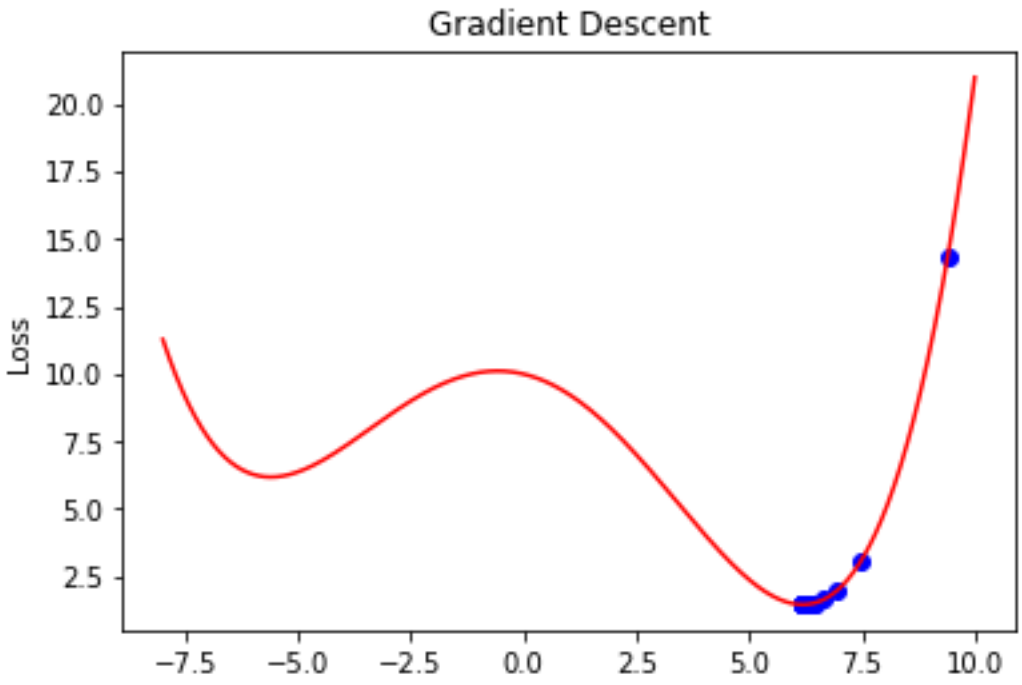
Assignment 4
Gradient Descent
ITC 502 Machine Learning and Deep Learning

The starting point plays a very effective role in finding the local minimum or local maximum. Although the learning rate increases the number of iterations, it can catch the minimum point more precisely.

Figures are arranged in order of the starting points : [0.2,9.4, -1.1, -7.8]



Learning Rate:0.2000
Minimum of the function is found at x =6.1819
Where y = 1.4539
Iteration count :36

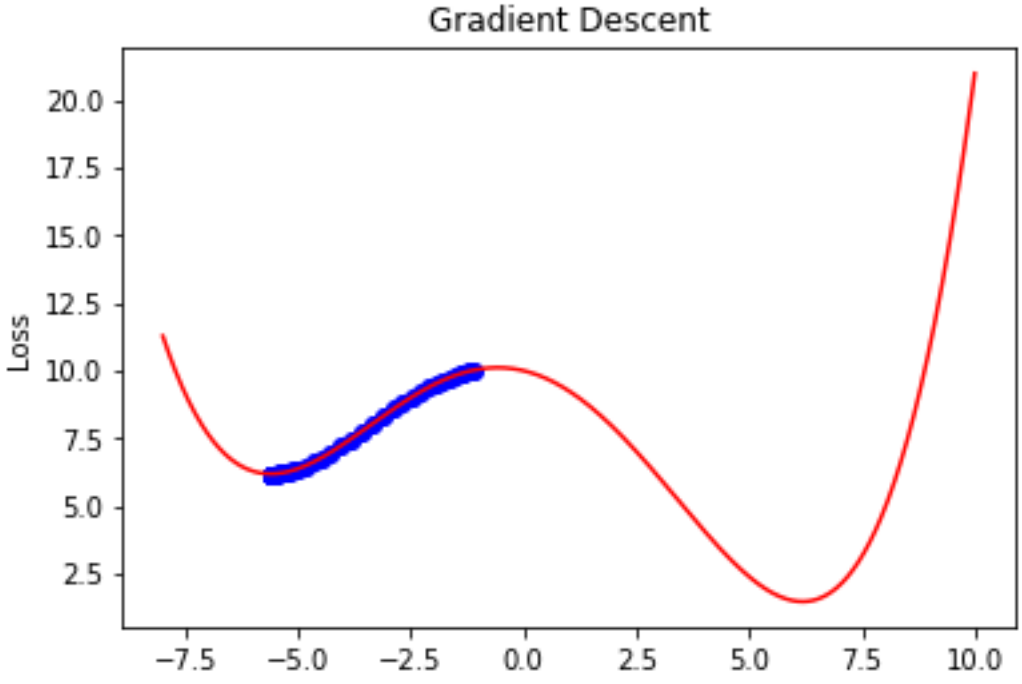


Learning Rate:0.2000

Minimum of the function is found at x =6.1853

Where y = 1.4540

Iteration count :17

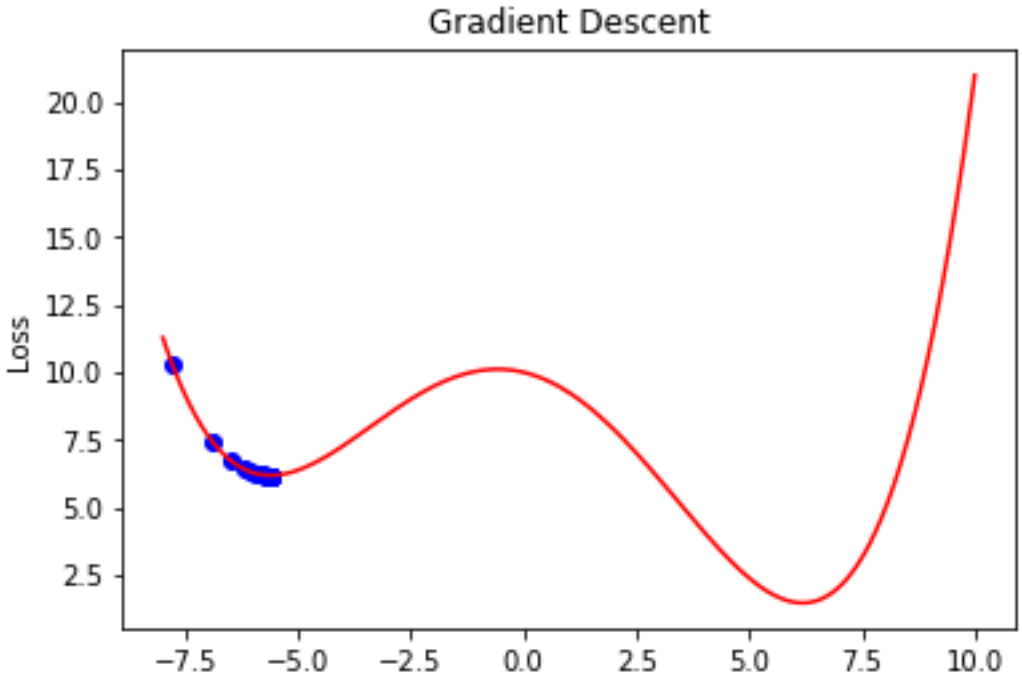


Learning Rate:0.2000

Minimum of the function is found at x =-5.6038

Where y = 6.1812

Iteration count :44

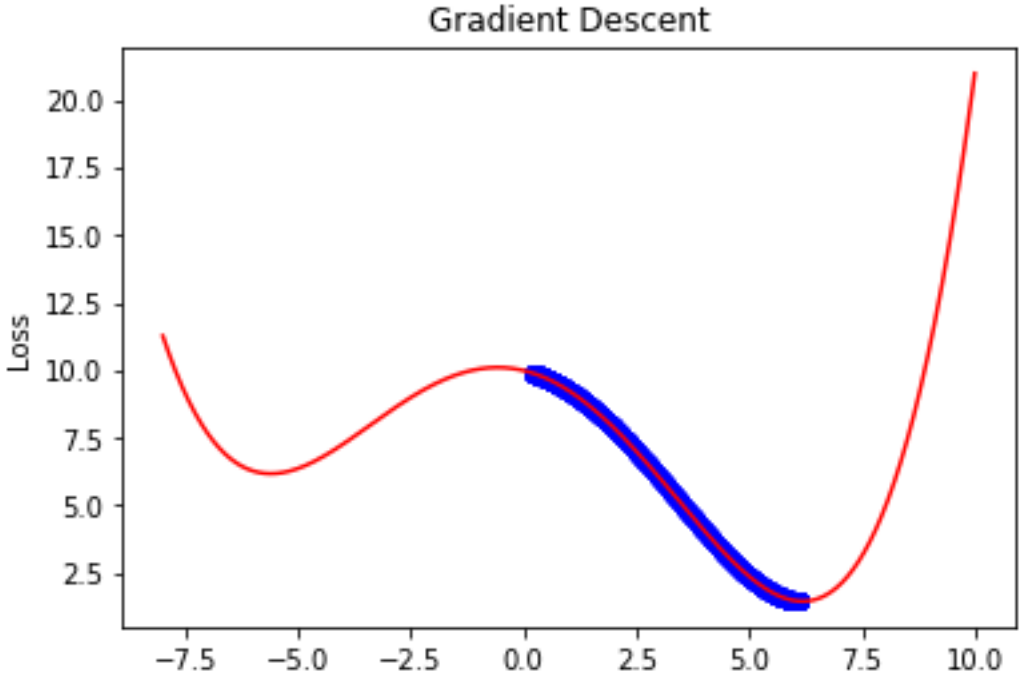


Learning Rate:0.2000

Minimum of the function is found at x =-5.6094

Where y = 6.1812

Iteration count :22

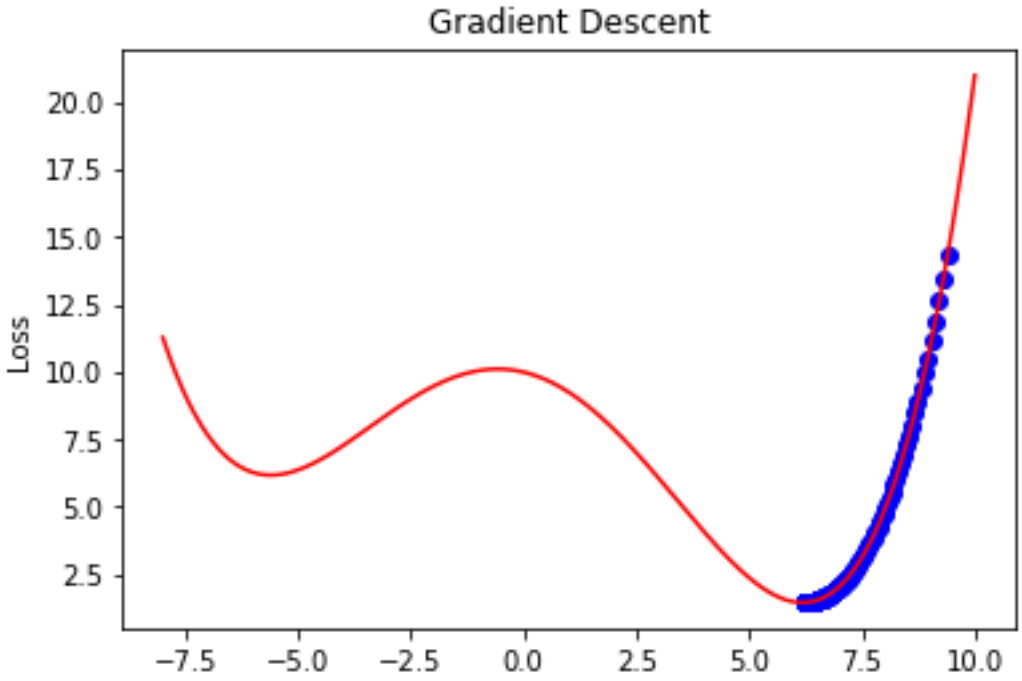


Learning Rate:0.0100

Minimum of the function is found at x =6.1211

Where y = 1.4570

Iteration count :543

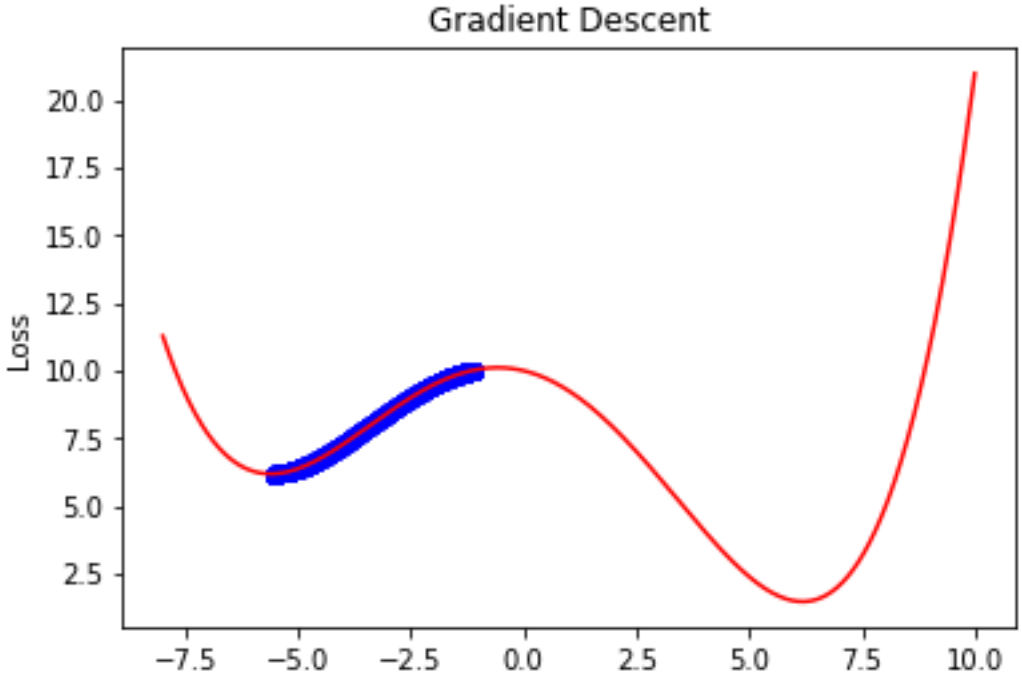


Learning Rate:0.0100

Minimum of the function is found at x =6.2438

Where y = 1.4569

Iteration count :211

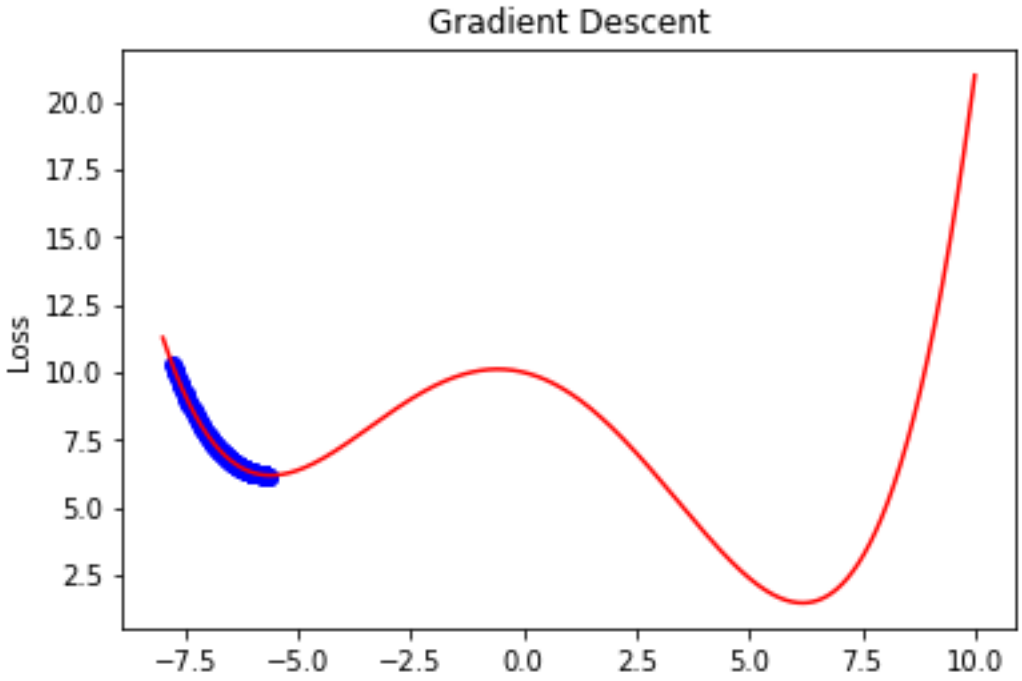


Learning Rate:0.0100

Minimum of the function is found at x =-5.5217

Where y = 6.1854

Iteration count :635

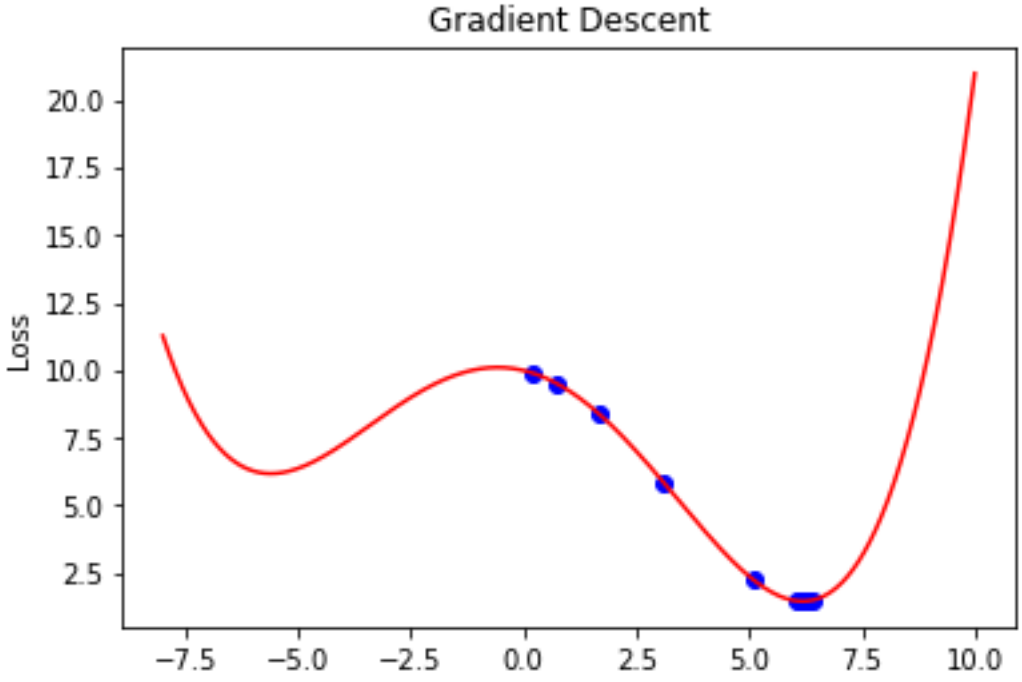


Learning Rate:0.0100

Minimum of the function is found at x =-5.6871

Where y = 6.1851

Iteration count :236

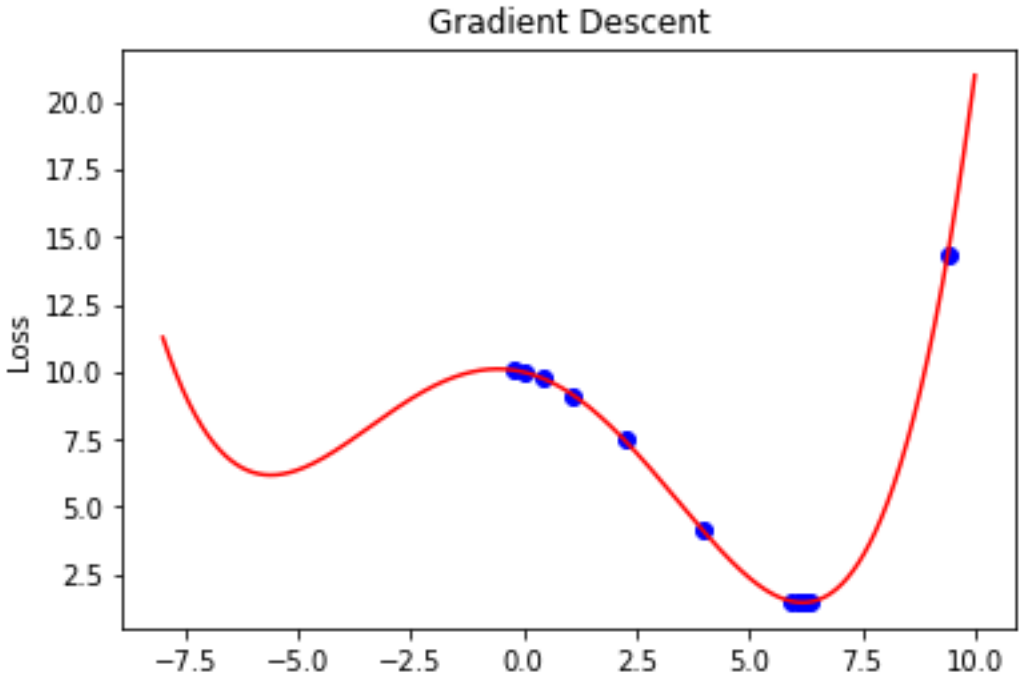


Learning Rate:1.0000

Minimum of the function is found at x =6.1831

Where y = 1.4539

Iteration count :18

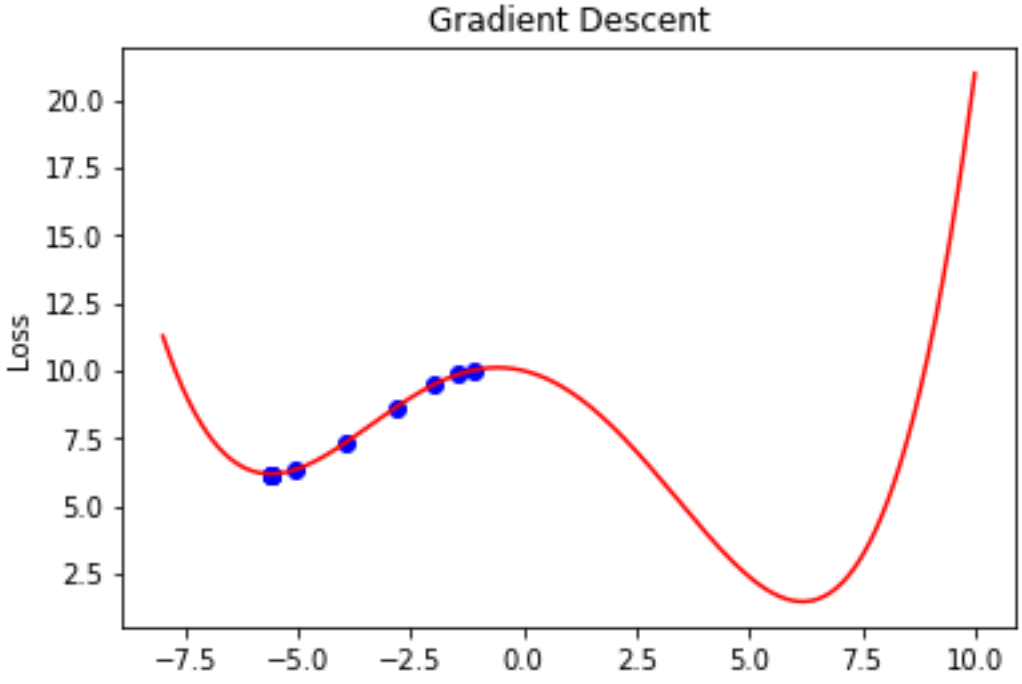


Learning Rate:1.0000

Minimum of the function is found at x =6.1837

Where y = 1.4539

Iteration count :20

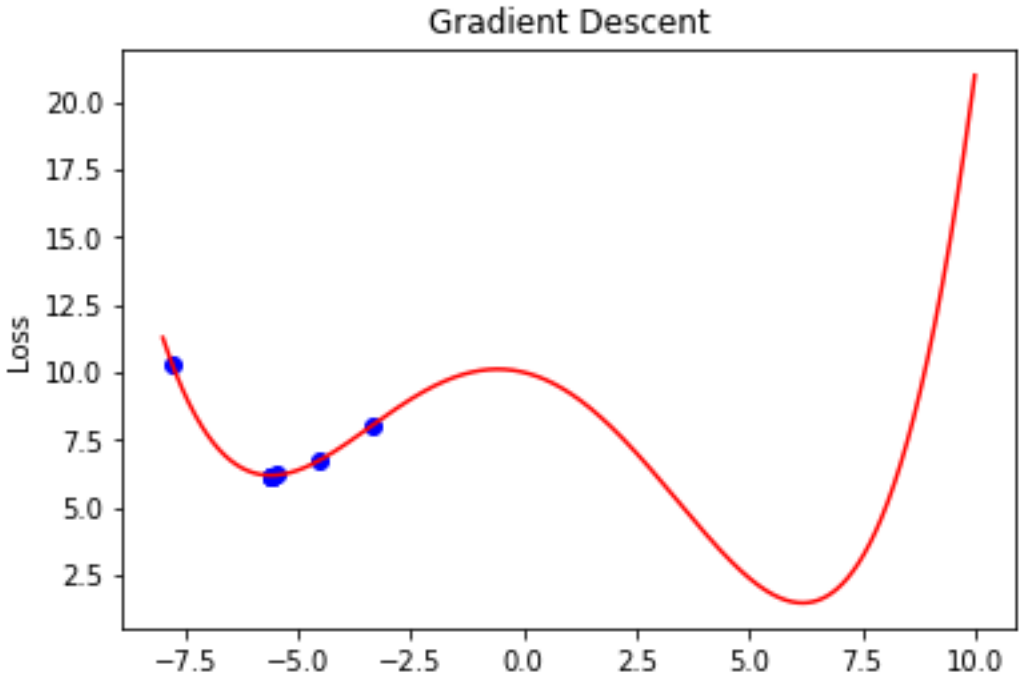


Learning Rate:1.0000

Minimum of the function is found at x =-5.6064

Where y = 6.1812

Iteration count :9



Learning Rate:1.0000

Minimum of the function is found at x =-5.6064

Where y = 6.1812

Iteration count :7