X= [0.5, 2.5]

Y= [0.2,0.9]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Weight | Bias | Learning Rate | Epochs | Error |
| -2 | -2 | 1.0 | 100 | 0.10092996520530934 |
|  |  |  | 200 | 0.1009332129031061 |
|  |  |  | 300 | 0.1009332129031061 |
|  |  |  | 400 | 0.1009332129031061 |
|  |  | 2.0 | 100 | 0.1009332129031061 |
|  |  |  | 200 | 0.1009332129031061 |
|  |  | 3.0 | 100 | 0.10093321290310615 |
|  |  |  | 200 | 0.10093321290310615 |
|  |  | 10 | 100 | 0.13290917862013615 |
|  |  |  | 200 | 0.12220446769073519 |
|  |  |  | 300 | 0.18396581232981854 |
|  |  |  | 400 | 0.10632807219281722 |
|  |  |  | 500 | 0.1771430679095161 |
|  |  |  | 1000 | 0.10532735291120748 |
|  |  |  | 2000 | 0.1628551936779409 |
|  |  | 15 | 100 | 0.31799729650383535 |
|  |  | 0.1 | 100 | 0.41502091515861816 |
|  |  |  | 300 | 0.41277082945526056 |
|  |  | 0.5 | 100 | 0.408614069914746 |
|  |  | 0.75 | 100 | 0.3803957359683532 |
|  |  |  | 300 | 0.1009332129031061 |
|  |  | -1 | 100 | 0.4197163194386488 |
| 5 | 5 | 1.0 | 100 | 0.32454279839059097 |
| 10 | 10 | 1.0 | 100 | 0.3249997552737734 |
| 0 | 0 | 1.0 | 100 | 0.1009332129031061 |

X= [0.7, 1.5]

Y= [3.9,0.2]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Weight | Bias | Learning Rate | Epochs | Error |
| -2 | -2 | 1.0 | 100 | 4.534897046393061 |
|  |  |  | 1000 | 4.525864969655283 |
|  |  |  | 2000 | 4.525428016459252 |
|  |  | 2.0 | 100 | 4.52956203713924 |
|  |  |  | 200 | 4.5272058388919545 |
|  |  |  | 1000 | 4.525000120012796 |
|  |  |  | 2000 | 4.525000119978531 |
|  |  | 4.0 | 1000 | 4.525000119978531 |
|  |  |  | 2000 | 4.525000119910061 |
|  |  | 6.0 | 1000 | 4.525000119944286 |
|  |  | 10.0 | 1000 | 4.5250843619565515 |
| 0 | 0 | 1.0 | 1000 | 4.525857180905935 |
| 2 | 2 | 1.0 | 1000 | 4.525847143669928 |
| 10 | 10 | 1.0 | 1000 | 4.525000120029935 |
| 10 | 10 | -1.0 | 1000 | 4.525000120064228 |

Observations:

* For a constant Learning rate, the error decreases as the number of epochs increases
* As we increase the Learning rate, the error also increases
* When Learning rate<1, the error shoots up
* With increasing weights, error increases