w
7. A
Input variables (
1 - fixed acidity, 2 - volatile acidity, 3 - citric acid, 4 -
dioxide, 8 – density,,

Output variable (based on sensc

Run #	num_iters	rate	initial thetas
1	3000	0.0001	[0.59032516 0.88386129 0.32016442 0.13933556 0.71139751 0.31098949 0.02996848 0.77422878 0.91673248 0.1620546 0.27254756]
2	30000	0.0001	[0.43623829 0.39451503 0.48422476 0.57032001 0.50250363 0.82082262 0.55169396 0.92470118 0.09077585 0.56253842 0.97950525]

3	30000	0.00001	[0.46814341 0.65931526 0.44954241 0.66544848 0.30246535 0.69133692 0.02947311 0.32299339 0.54447064 0.62668132 0.48449688]
4	70000	0.0001	[0.33308001 0.42090815 0.9206524 0.93717661 0.29452913 0.657837 0.39968753 0.95794778 0.52437033 0.34927309 0.81118816]
5	60000	0.00035	[0.83539896 0.4927948 0.23624882 0.43283891 0.21489733 0.5807906 0.36407335 0.37906504 0.32673923 0.27023929 0.48605227]

6	10000	0.00007	[0.91881269 0.95929696 0.45489978 0.18553988 0.30436729 0.99250272 0.91878402 0.34160723 0.48138968 0.37428045 0.19686695]
7	5000	0.0007	[0.07630829 0.77991879 0.43840923 0.72346518 0.97798951 0.53849587 0.50112046 0.07205113 0.26843898 0.4998825 0.67923]
8	5000	0.00017	[0.89286015 0.33197981 0.82122912 0.04169663 0.10765668 0.59505206 0.52981736 0.41880743 0.33540785 0.62251943 0.43814143]

9	15000	0.00017	[0.5488135 0.71518937 0.60276338 0.54488318 0.4236548 0.64589411 0.43758721 0.891773 0.96366276 0.38344152 0.79172504]
10	30000	0.00017	[4.17022005e-01 7.20324493e-01 1.14374817e-04 3.02332573e-01 1.46755891e-01 9.23385948e-02 1.86260211e-01 3.45560727e-01 3.96767474e-01 5.38816734e-01 4.19194514e-01]

winequality-red.csv
Attribute information:
(based on physicochemical tests):
- residual sugar, 5 – chlorides, 6 - f
9 – pH, 10 – sulphates, 11 – alcol

ory data): , 12 - quality (score betwe

Thetas	Last 10 costs
[1.89813405 0.60988841 0.18822966 - 0.0184213 0.41855506 0.12720926 -0.09786632 0.51727151 0.45508735 0.33278735 0.19584337]	[8.15441131 8.15269441 8.15097792 8.14926185 8.14754618 8.14583093 8.14411608 8.14240165 8.14068762 8.13897401]
[5.37717933 0.39242434 - 0.05334264 0.19452015 0.11918044 - 0.08448652 -0.03722523 - 0.02932651 - 0.42464679 0.30047415 0.23517455]	[0.27533789 0.27532978 0.27532168 0.27531358 0.27530547 0.27529737 0.27528928 0.27528118 0.27527308 **0.27526499**]

[1.80756925 0.47065471 0.337946 0.49279306 0.15119881 0.42015132 -0.02636217 0.18708361 0.20955082 0.70102721 0.33298207]	[8.24234562 8.24217988 8.24201415 8.24184842 8.24168269 8.24151697 8.24135125 8.24118554 8.24101982 8.24085412]
[5.63118855 0.22205664 - 0.10713788 0.13790041 0.11800863 - 0.13562561 0.03517671 - 0.13329688 - 0.33819308 0.10805003 0.21726983]	[0.22579646 0.22579628 0.22579611 0.22579594 0.22579577 0.2257956 0.22579543 0.22579526 0.22579508 **0.22579491**]
[5.63602251 0.2956749 - 0.1752053 0.01135852 0.13319583 - 0.10814081 0.04021451 - 0.12954196 - 0.35365144 0.09501106 0.21367535]	[0.22266663 0.22266663 0.22266663 0.22266663 0.22266663 0.22266663 0.22266663 0.22266663 0.22266663 0.22266663]

[3.29358283
0.67661124
0.12195737
0.04504308
0.030697
0.42117972
0.45125819 -
0.09590119 -
0.1059958
0.50750175
0.05863367]

[3.31119756
3.31075861
3.31031973
3.30988091
3.30944216
3.30900347
3.30856485
3.30812629
3.3076878
3.30724937]

[5.46833933
0.41200827 -
0.03770189
0.18960746
0.15640503 -
0.09208557
0.10173232 -
0.18133804 -
0.46072165
0.26094439
0.22202212]

[0.25234281
0.25231623
0.25228969
0.25226318
0.2522367
0.25221025
0.25218383
0.25215744
0.25213108
0.25210476]

[3.60887058
0.36705909
0.23288255
0.18030378 -
0.02626978
0.13856338
0.16412976 -
0.01028878 -
0.07319143
0.45536418
0.28460436]

[2.49092088
2.4901461
2.48937158
2.48859734
2.48782336
2.48704966
2.48627622
2.48550306
2.48473016
2.48395754]

[5.23889086
0.29067315 -
0.07459622
0.18407001
0.03601113 -
0.10515169
-0.04507089 -
0.01126122 -
0.24478367
0.30631584
0.23849063]

[0.32953539
0.32950385
0.32947232
0.3294408
0.32940929
0.32937779
0.3293463
0.32931482
0.32928335
0.3292519]

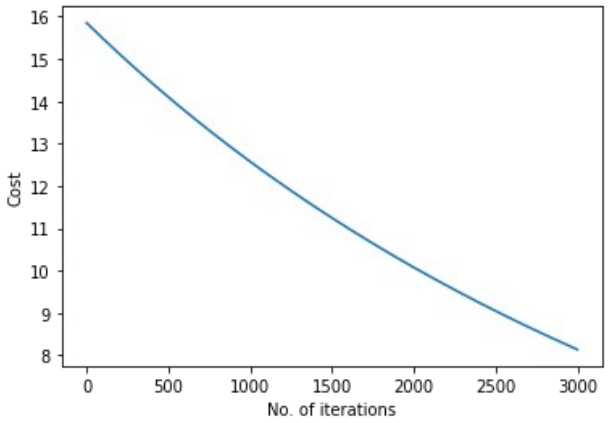
[5.60421738
0.37023374 -
0.1784802
0.01827044
0.12100759 -
0.08670294
0.00666292 -
0.07801987 -
0.37062834
0.18083456
0.20705593]

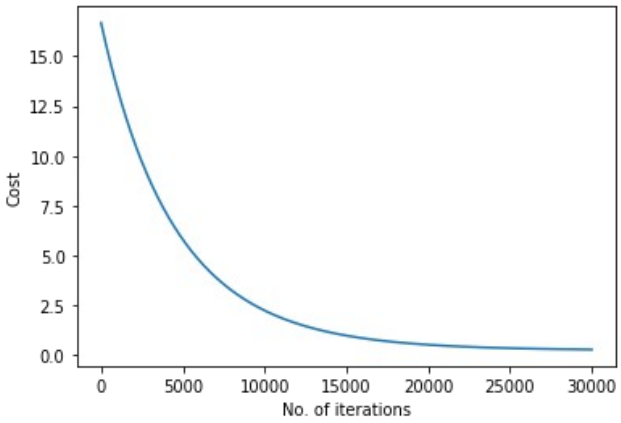
[0.2250945
0.2250941
0.2250937
0.22509331
0.22509291
0.22509251
0.22509212
0.22509172
0.22509133
0.22509093]

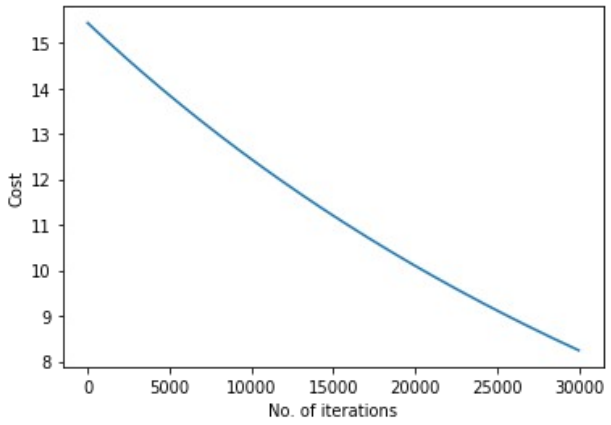
free sulfur dioxide, 7 – total & sulfur
ıol

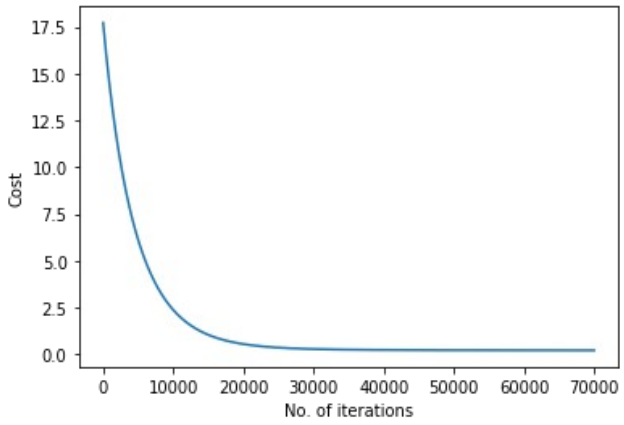
:en 0 and 10)

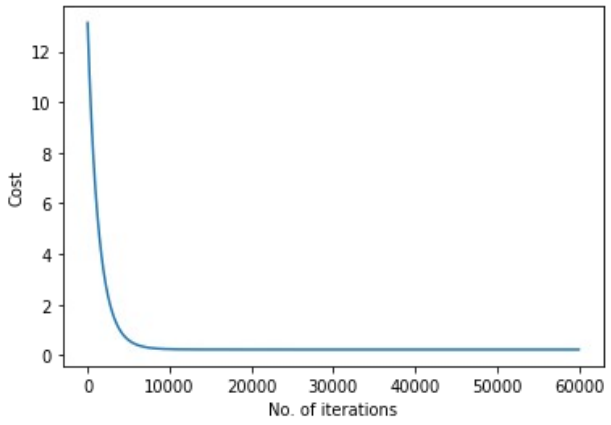
Line Curve of the cost & Iterations

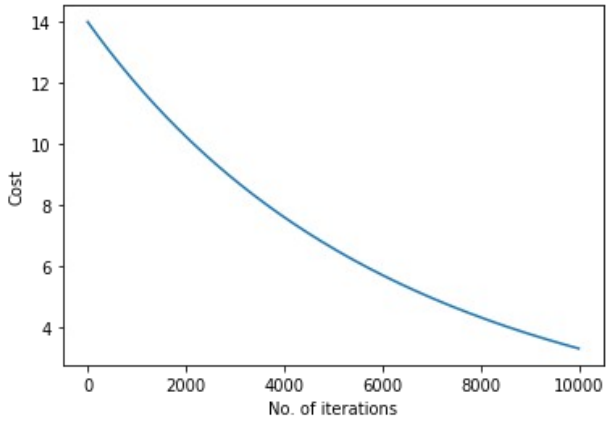


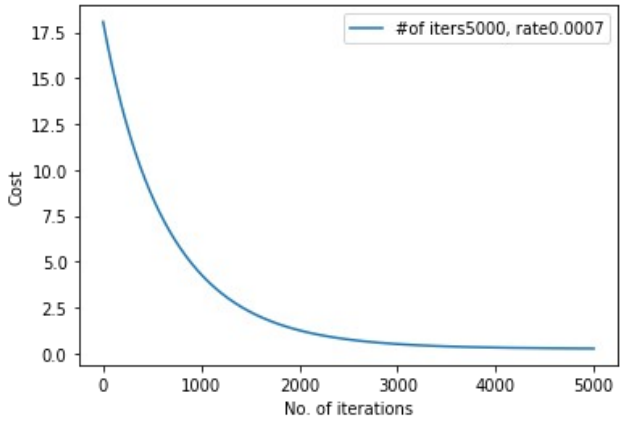


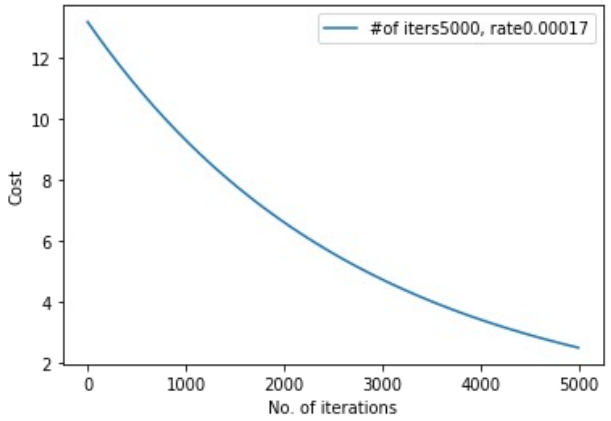

Cost
No. of iterations
15
14
13
12
11
10
9
8
0
5000
10000
15000
20000
25000
30000

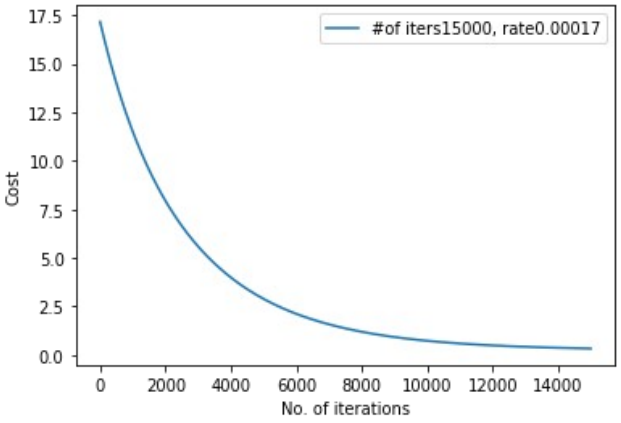

Cost
No. of iterations
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
0
10000
20000
30000
40000
50000
60000
70000

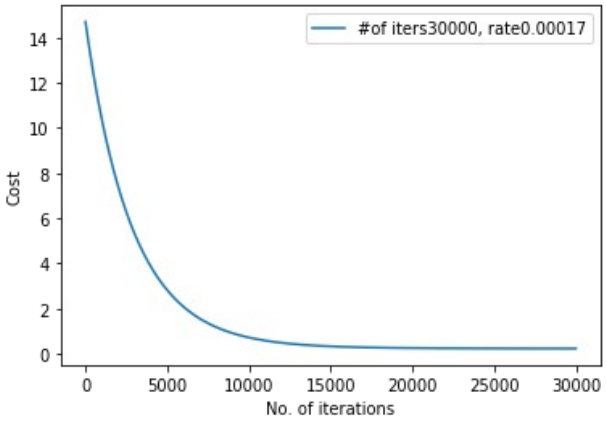

Cost
No. of iterations
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
60000


14
12
10
8
6
4
Cost
0
2000
4000
6000
8000
10000
No. of iterations


#of iters5000, rate0.0007
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Cost
0
1000
2000
3000
4000
5000
No. of iterations


#of iters5000, rate0.00017
12
10
8
6
4
2
Cost
0
1000
2000
3000
4000
5000
No. of iterations


#of iters15000, rate0.00017
Cost
No. of iterations
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
0
2000
4000
6000
8000
10000
12000
14000


#of iters30000, rate0.00017
Cost
No. of iterations
14
12
10
8
6
4
2
0
0
5000
10000
15000
20000
25000
30000