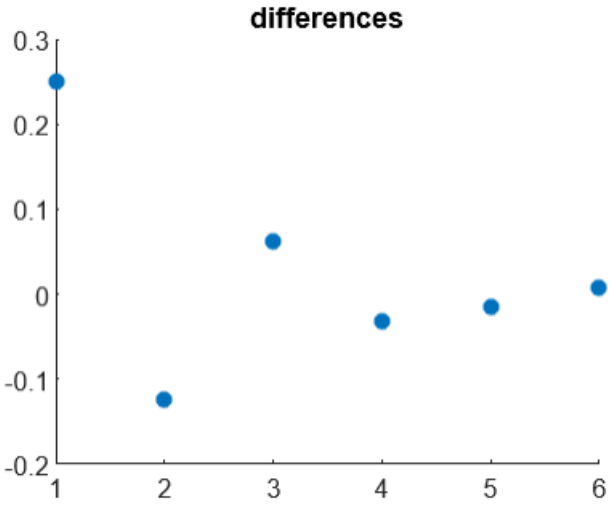
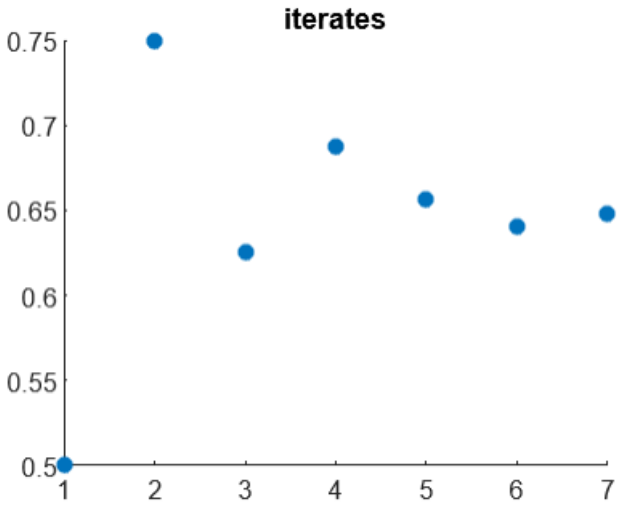
1.

index	iterates	differences
1	0.5	0
2	0.75	0.25
3	0.625	-0.125
4	0.6875	0.0625
5	0.65625	-0.03125
6	0.64062	-0.015625
7	0.64844	0.0078125

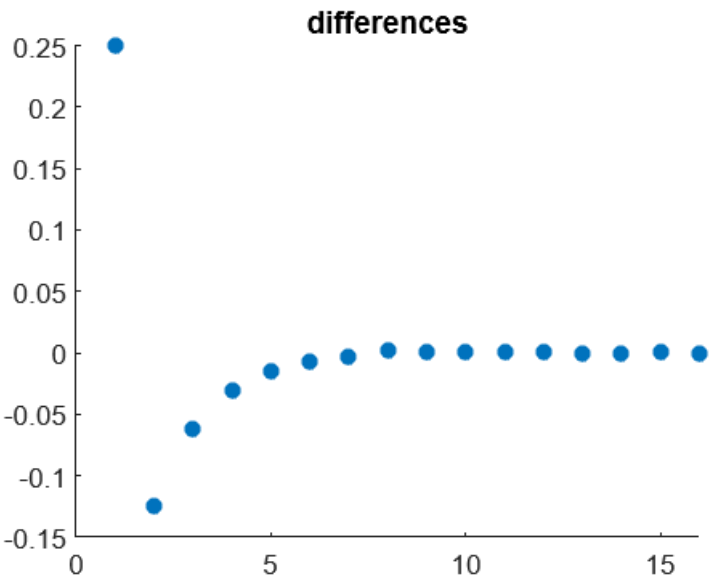


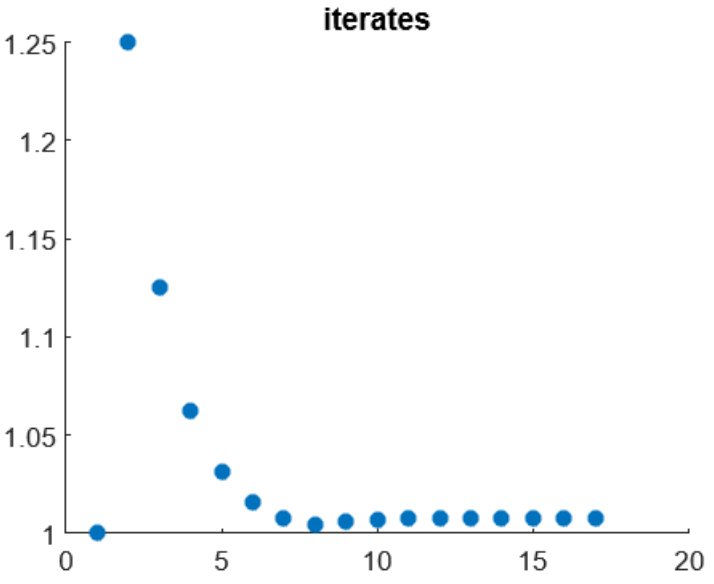


2.

a)

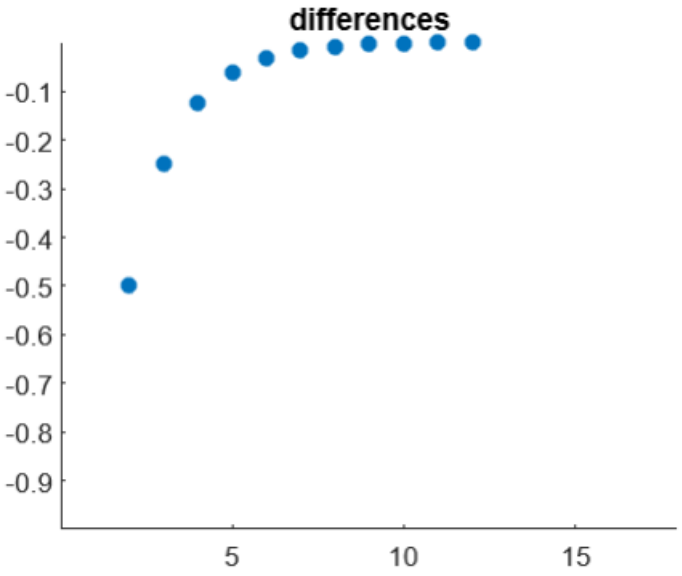
index	iterates	differences
1	1	0
2	1.25	0.25
3	1.125	-0.125
4	1.0625	-0.0625
5	1.0312	-0.03125
6	1.0156	-0.015625
7	1.0078	-0.0078125
8	1.0039	-0.0039062
9	1.0059	0.0019531
10	1.0068	0.00097656
11	1.0073	0.00048828
12	1.0076	0.00024414
13	1.0077	0.00012207
14	1.0076	-6.1035e-05
15	1.0076	-3.0518e-05
16	1.0076	1.5259e-05
17	1.0076	7.6294e-06

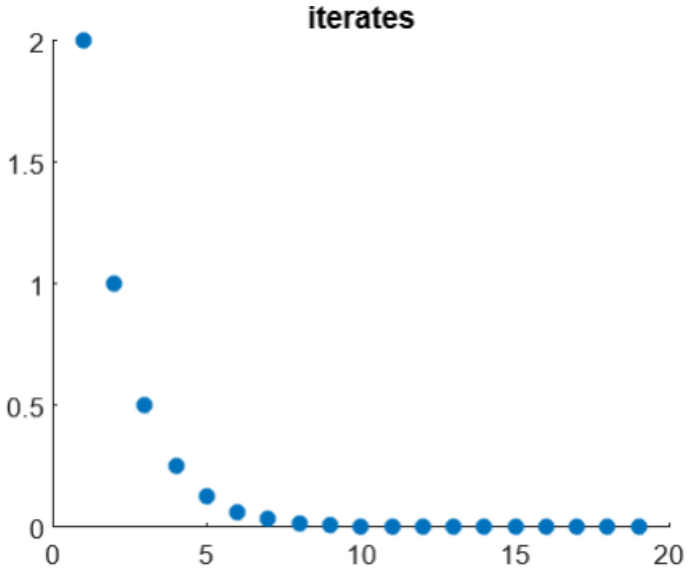




b)

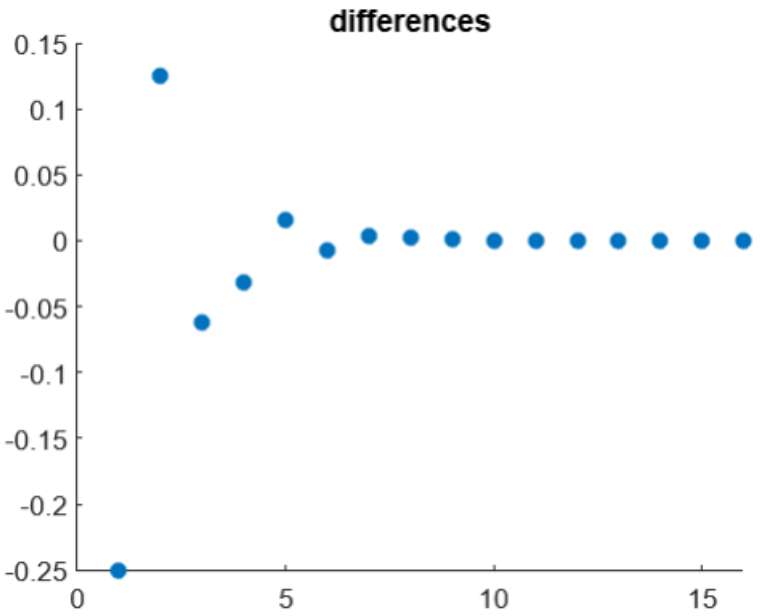
index	iterates	differences
1	2	0
2	1	-1
3	0.5	-0.5
4	0.25	-0.25
5	0.125	-0.125
6	0.0625	-0.0625
7	0.03125	-0.03125
8	0.015625	-0.015625
9	0.0078125	-0.0078125
10	0.00390625	-0.00390625
11	0.001953125	-0.001953125
12	0.0009765625	-0.0009765625
13	0.00048828125	-0.00048828125
14	0.000244140625	-0.000244140625
15	0.0001220703125	-0.0001220703125
16	6.103515625e-05	-6.103515625e-05
17	3.0517578125e-05	-3.0517578125e-05
18	1.52587890625e-05	-1.52587890625e-05
19	7.62939453125e-06	-7.62939453125e-06

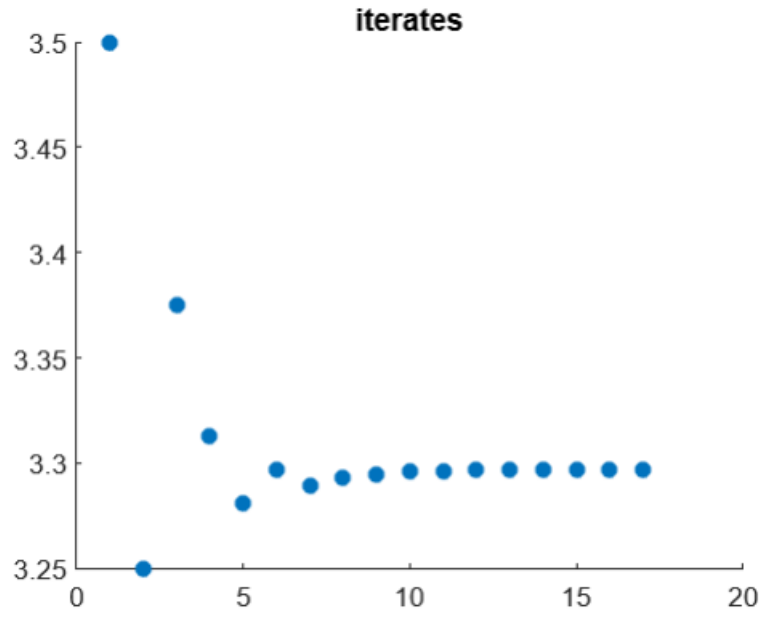




c)

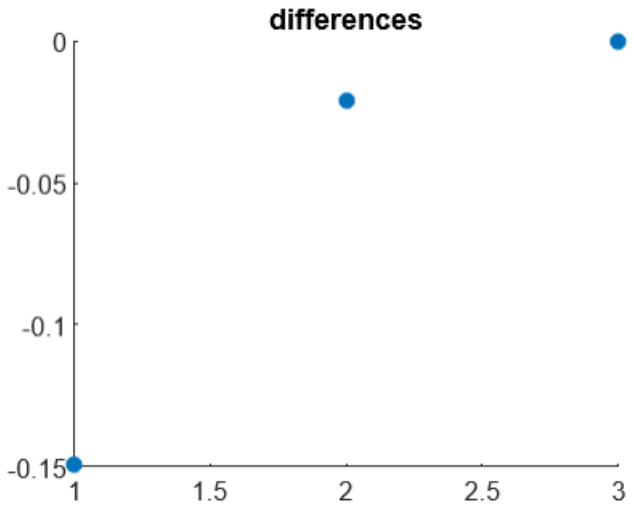
index	iterates	differences
1	3.5	0
2	3.25	-0.25
3	3.375	0.125
4	3.3125	-0.0625
5	3.28125	-0.03125
6	3.296875	0.015625
7	3.2890625	-0.0078125
8	3.29296875	0.00390625
9	3.294921875	0.001953125
10	3.2958984375	0.0009765625
11	3.29638671875	0.00048828125
12	3.296630859375	0.000244140625
13	3.2965087890625	-0.0001220703125
14	3.29656982421875	6.103515625e-05
15	3.29660034179688	3.0517578125e-05
16	3.29658508300781	-1.52587890625e-05
17	3.29659271240234	7.62939453125e-06

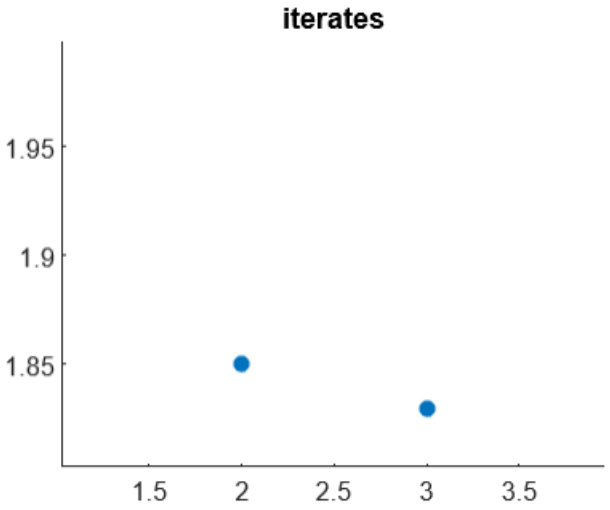




3)
a)

index	iterates	differences
1	2	0
2	1.85052133606399	-0.149478663936005
3	1.8297512018955	-0.0207701341684956
4	1.82938371517741	-0.000367486718092502

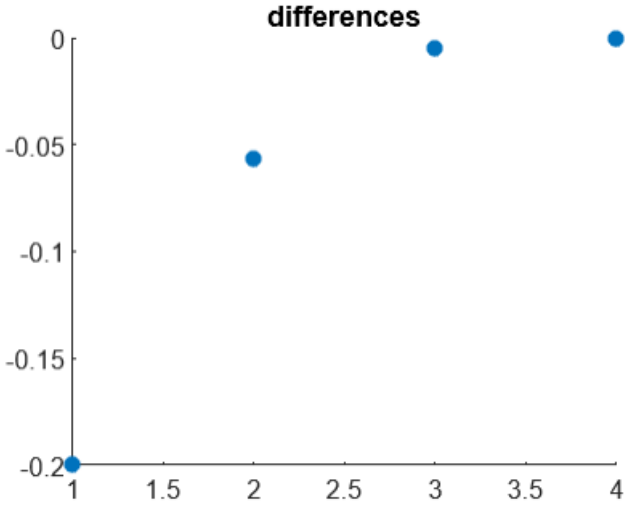


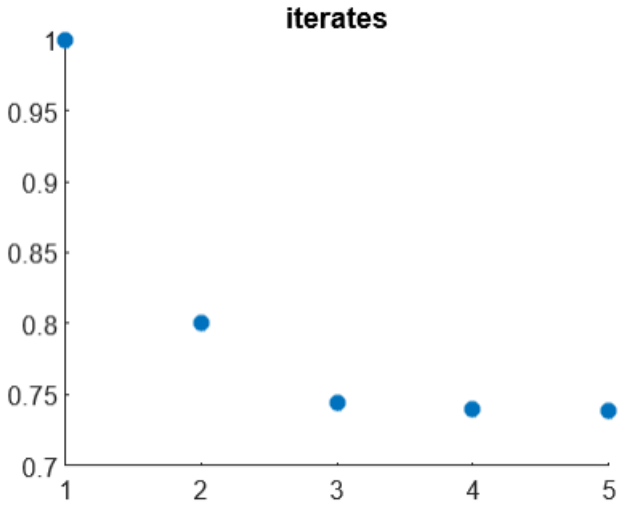


b)

initial guess:1

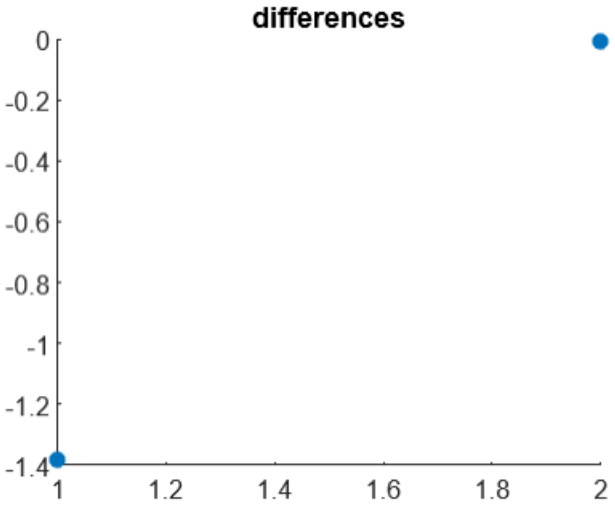
index	iterates	differences
1	1	0
2	0.800232943226195	-0.199767056773805
3	0.744094398494345	-0.0561385447318503
4	0.739124068356762	-0.0049703301375823
5	0.739085135600735	-3.89327560272879e-05

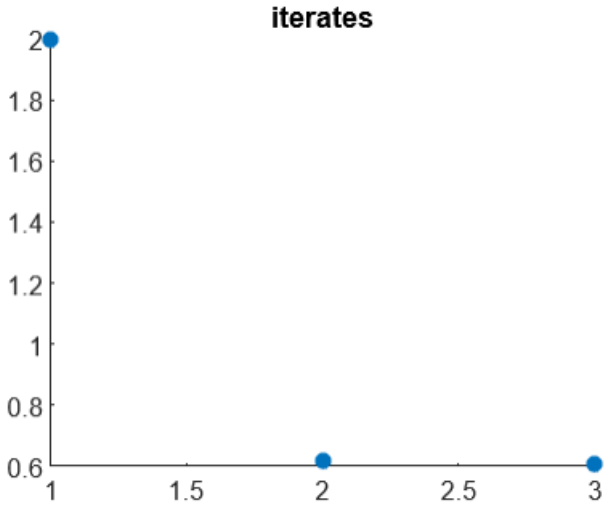




c)

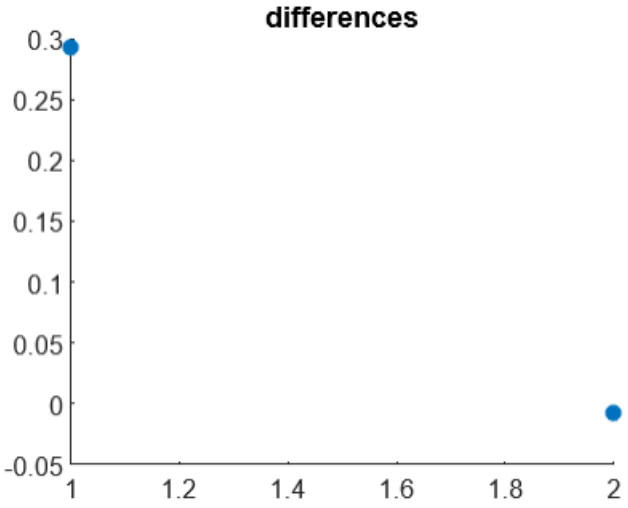
```
initial guess:2
    index         iterates              differences
    _____    __________________    ____________________

      1                      2                       0
      2      0.614547258701416       -1.38545274129858
      3      0.607107991181361    -0.00743926752005475
```

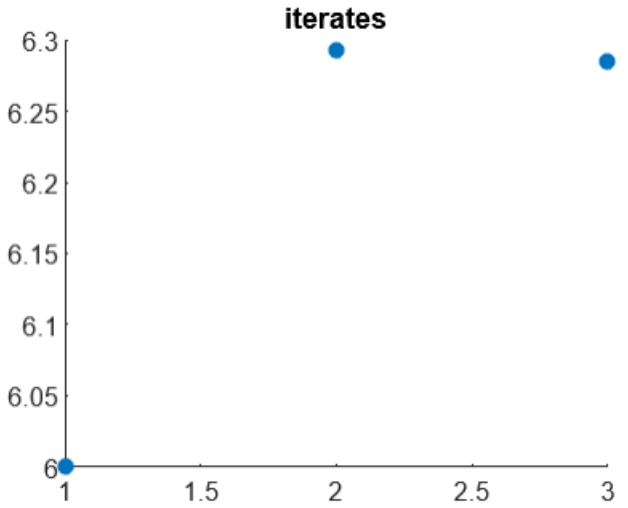




d)

```
initial guess:6
    index          iterates              differences
    _____    ________________    ____________________

      1                    6                       0
      2      6.29283179955083       0.292831799550825
      3      6.28504900414274     -0.00778279540808136
```



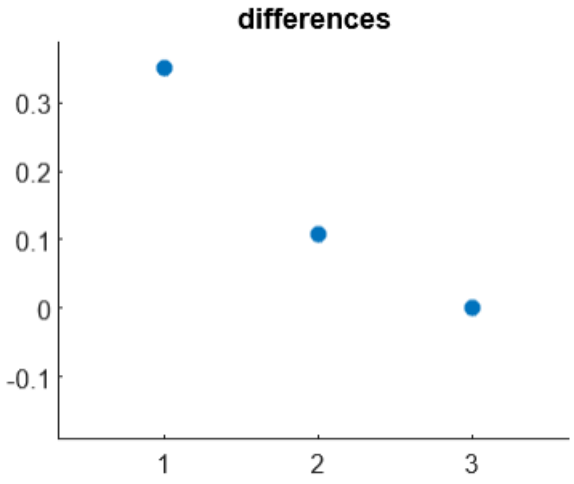


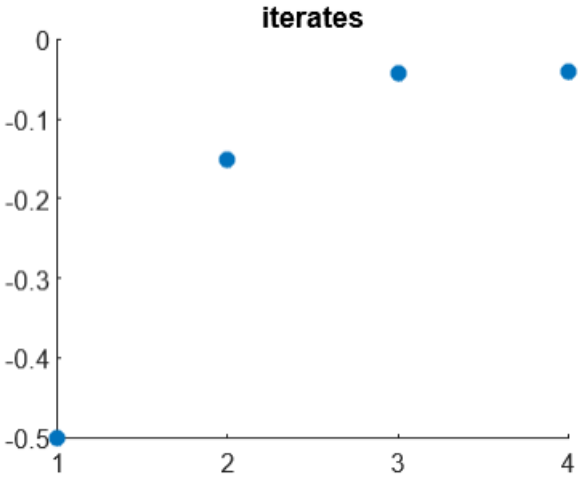
4.We can’t because f’ becomes very small near 0

5.
a)

initial guess:-0.5

index	iterates	differences
1	-0.5	0
2	-0.150452488687783	0.349547511312217
3	-0.0418168139488704	0.108635674738912
4	-0.0406593434973293	0.00115747045154106

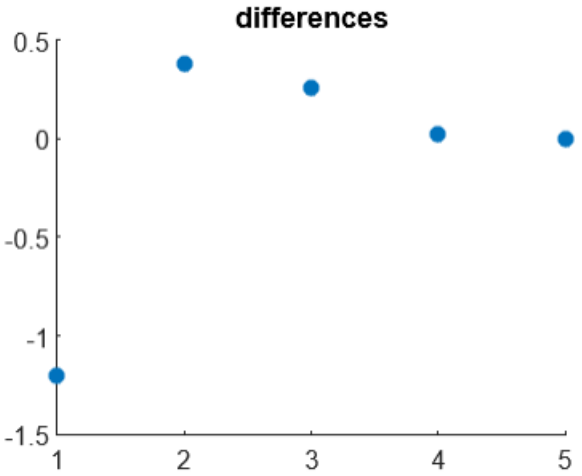


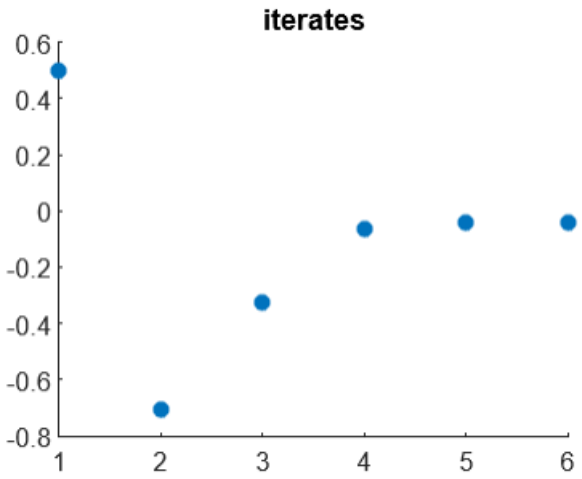


b.

initial guess:0.5

index	iterates	differences
1	0.5	0
2	-0.705089820359281	-1.20508982035928
3	-0.323791114230475	0.381298706128807
4	-0.064603131030575	0.2591879831999
5	-0.0406861511519556	0.0239169798786194
6	-0.0406592883453349	2.68628066206339e-05





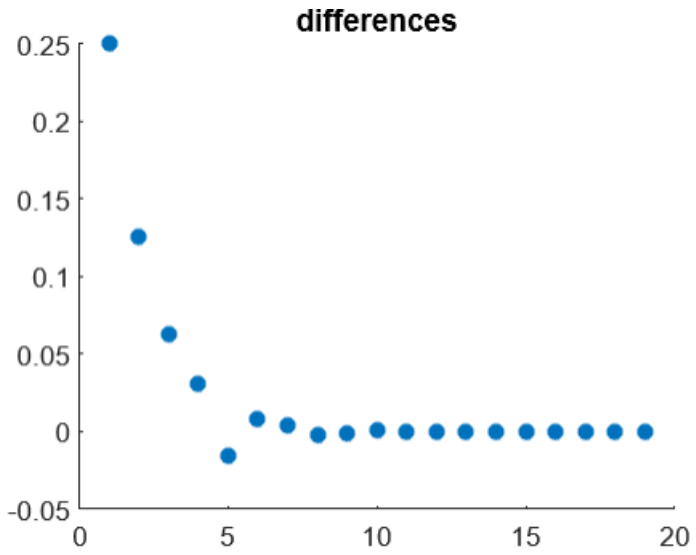
c.

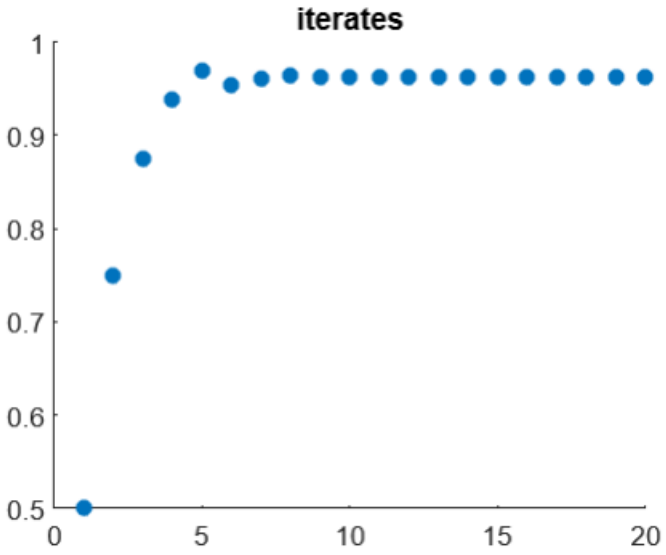
```
5:newton
  -0.040659288315759

    index    iterates    differences
    _____    ________    ___________

      1         -0.5           0
```

d.

-0.500000000000000

index	iterates	differences
1	0.5	0
2	0.75	0.25
3	0.875	0.125
4	0.9375	0.0625
5	0.96875	0.03125
6	0.953125	-0.015625
7	0.9609375	0.0078125
8	0.96484375	0.00390625
9	0.962890625	-0.001953125
10	0.9619140625	-0.0009765625
11	0.96240234375	0.00048828125
12	0.962158203125	-0.000244140625
13	0.9622802734375	0.0001220703125
14	0.96234130859375	6.103515625e-05
15	0.962371826171875	3.0517578125e-05
16	0.962387084960938	1.52587890625e-05
17	0.962394714355469	7.62939453125e-06
18	0.962398529052734	3.814697265625e-06
19	0.962396621704102	-1.9073486328125e-06
20	0.962397575378418	9.5367431640625e-07

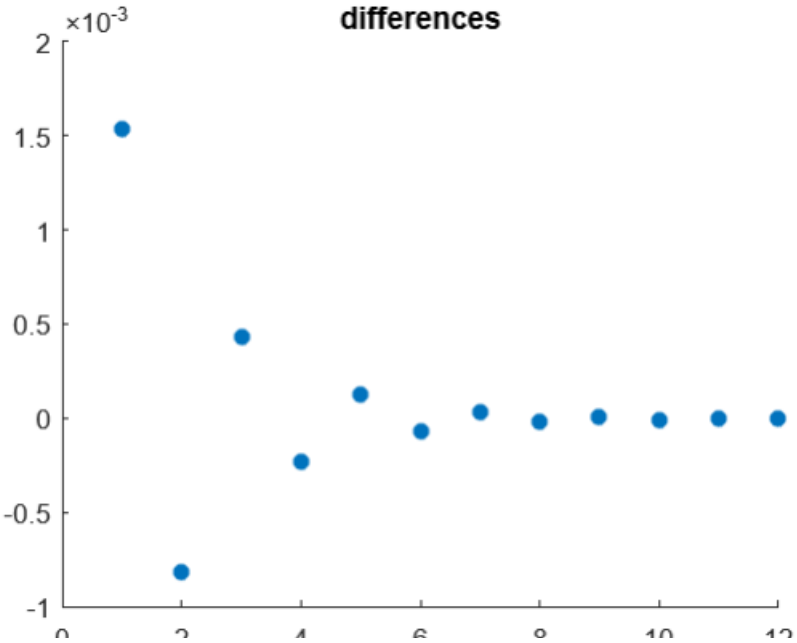


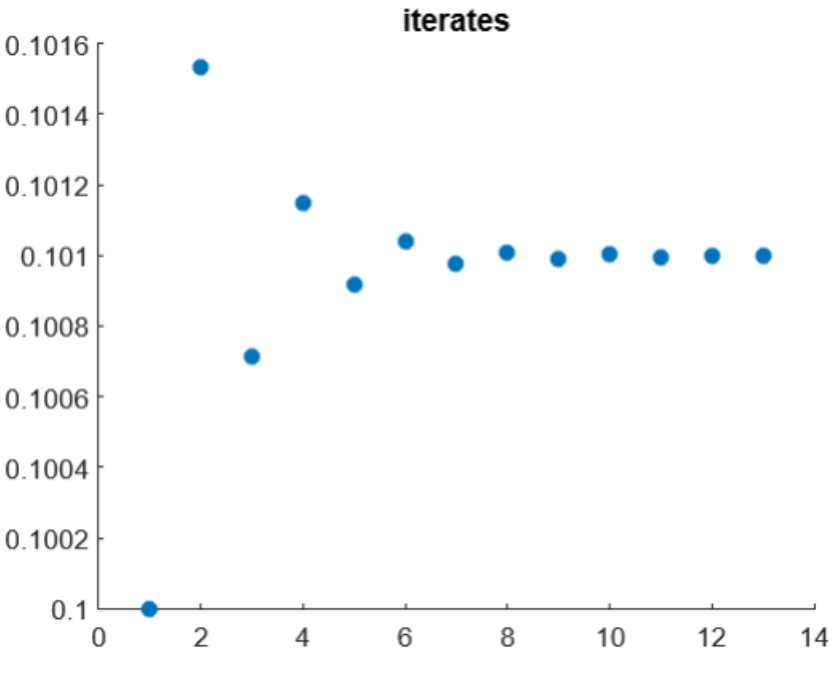

iterates
1
0.9
0.8
0.7
0.6
0.5
0
5
10
15
20

6.

initial guess:0.1

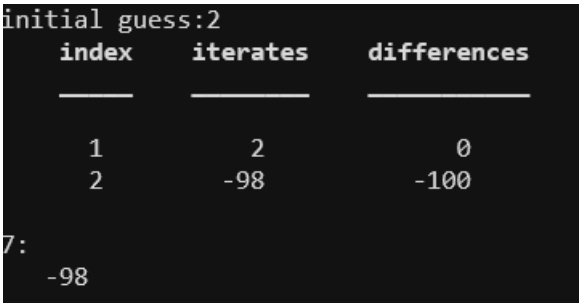
index	iterates	differences
1	0.1	0
2	0.101530563117575	0.00153056311757539
3	0.100714412386313	-0.00081615073126251
4	0.101149062480839	0.000434650094526506
5	0.100917428278626	-0.00023163420221313
6	0.101040826639374	0.000123398360748012
7	0.100975076092602	-6.57505467727554e-05
8	0.101010106484263	3.50303916616945e-05
9	0.100991442074825	-1.86644094384708e-05
10	0.10100138629934	9.94422451569554e-06
11	0.100996088026753	-5.29827258782811e-06
12	0.100998910917701	2.82289094814814e-06
13	0.100997406890092	-1.50402760851209e-06





7.

the tangent drawn at x=2 has less slope and high value so it crosses 1 or we can say from the theory of fixed point iteration, that the g(x)=x-(f(x)/f’(x)) is such that g([1,3]) is not a subset of [1,3].



```
initial guess:2
    index    iterates    differences
    _____    ________    ___________

      1          2             0
      2        -98          -100

7:
   -98
```