```
% Problem 5

close all
clear
clc

format long e
x_Newton = Newton(10^(-10),1);
x_true = 0.722734247813416;

% calculating error
for i = 1 : length(x_Newton)
   error_Newton(i) = abs(x_true - x_Newton(i));
end

% calculating ratio with r = 1 and 2.
for i = 1 : length(error_Newton)-1
   ratio_Newton(i) = error_Newton(i+1)/(error_Newton(i)^2);
   ratio2_Newton(i) = error_Newton(i+1)/(error_Newton(i));
end

ratio_Newton(length(error_Newton)) = NaN;
ratio2_Newton(length(error_Newton)) = NaN;

% creating table
format long
T_N = table;
T_N.x_values = x_Newton';
T_N.error = error_Newton';
T_N.ratio_1 = ratio_Newton'

T_N2 = table;
T_N2.ratio_2 = ratio2_Newton'
```

T_N =

x_values	error	ratio_1
0.859395137703139	0.136660889889723	3.65679995490666
0.791029370836153	0.068295123022737	7.33068571754304
0.756926206817823	0.0341919590044074	14.6385539222085
0.739848035704828	0.017113787891412	29.2343155366379
0.731296444898331	0.00856219708491546	58.4157764284469
0.727016779587598	0.00428253177418225	116.773639437604
0.724875885515391	0.00214163770197473	233.486828029585
0.72380516131156	0.00107091349814414	466.911934347488
0.723269728436296	0.000535480622879558	933.761511009941
0.723001994119849	0.00026774630643267	1867.46034642955
0.722868122468734	0.000133874655317556	3734.85786372229
0.722801185517151	6.69377037348928e-05	7469.65279542891

```
    0.722767716759386    3.34689459700055e-05    14939.2422890189
    0.722750982309595     1.6734496179116e-05    29878.4286889725
    0.722742615069048    8.36725563235774e-06    59756.7885682333
    0.722738431443958    4.18363054155435e-06    119513.783027956
    0.722736339635016    2.09182159982557e-06    239028.226276333
    0.722735293733434    1.04592001792803e-06     478078.93992684
    0.722734770807243    5.22993827134499e-07    955975.167001108
    0.722734509294175    2.61480758934063e-07    1913788.06214328
    0.722734378663292    1.30849875823458e-07    3821395.19263348
     0.72273431324216    6.54287438672796e-08    7693173.10424446
    0.722734280747279    3.29338626370301e-08    15484137.8042441
    0.722734264608121    1.67947045159877e-08    30015338.5471246
    0.722734256279605    8.46618941618971e-09    72016357.4845969
    0.722734252975287     5.1618705976253e-09                 NaN
```

```
T_N2 =

        ratio_2
    ________________

    0.499741535986243
    0.500650082920623
     0.50052083559196
    0.500309875244632
    0.500167390648721
    0.500086821278442
    0.500044193822649
    0.500022292937317
    0.500011195536561
    0.500005610165986
    0.500002809165886
    0.500001405822934
    0.500000693003996
    0.500000450733601
    0.500000325719161
    0.500001512812456
    0.500004406692827
    0.500032333419293
    0.499969111235451
    0.500418754928174
    0.500029086428449
    0.503354652564255
    0.509952467497819
    0.504098741846295
    0.609704123528628
                  NaN
```

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