Command Window

```
>> Question1

epsilon =

     2.220446049250313e-16


trueValue =

     2.220446049250313e-16


ea =

     0


er =

     0


ep =

     0

fx >>
```

Command Window

```
>> [estValue,ea,iter] = iterCosFun(pi/3)
Terms       Result              error_r%           error_a%
    1     1.000000000   100.000000000%   100.000000000%
    2     0.451688644     9.662271123%   121.391441302%
    3     0.501796202     0.359240300%     9.985638984%
    4     0.499964565     0.007086934%     0.366353197%
    5     0.500000433     0.000086687%     0.007173615%
    6     0.499999996     0.000000722%     0.000087408%

estValue =

   0.499999996390943


ea =

     8.740839498676053e-05


iter =

     6

>>
```

Command Window

```
>> [estValue,ea,iter] = iterCosFun(7*pi/3)
Terms       Result              error_r%           error_a%
    1     1.000000000   100.000000000%   100.000000000%
    2   -25.867256425  5273.451285038%   103.865891239%
    3    94.440988211 18788.197642189%   127.389862088%
    4  -121.049175703 24309.835140520%   178.018695842%
    5    85.723306118 17044.661223558%   241.209177742%
    6   -37.730233676  7646.046735290%   327.200570378%
    7    12.525189206  2405.037841222%   401.234840094%
    8    -2.312451820   562.490363926%   641.641088467%
    9     1.009604065   101.920813047%   329.045414857%
   10     0.426241142    14.751771682%   136.862181221%
   11     0.508732517     1.746503327%    16.215078130%
   12     0.499138071     0.172385787%     1.922202718%
   13     0.500072044     0.014408727%     0.186767603%
   14     0.499994834     0.001033291%     0.015442178%
   15     0.500000321     0.000064287%     0.001097578%
   16     0.499999982     0.000003503%     0.000067791%

estValue =

   0.499999982482867


ea =

     6.779063088569495e-05


iter =

    16

fx >>
```

Question 2) For $x = \pi/3$, the number of iterations needed to reach a desired error tolerance was only 6 whereas for $x = 7\pi/3$ it took 16 iterations to reach the same error tolerance. From this, I can conclude that for the same desired absolute error more number of iterations are required. This can also be seen in the output I received for both instances.