In [ ]:
```
#def fx(x):
#    return x**3 -4*x -9
```

In [ ]:
```
import math as m
def fx(x):
    return m.cos(x)-(1.3*x)
```

In [ ]:
```
def fx1(x):
    return (x*m.cos(x)-(2*x**2 +3*x-1))
```

In [ ]:
```
def fx2(x):
    return (2*x*m.cos(2*x)) - ((x+1)*2)
```

In [ ]:
```
def regular_false(x,y):
    return((x*fx2(y) - y*fx2(x))/(fx2(y) - fx2(x)))
```

In [ ]:
```
def tolrence(greater_val,smaller_val,tolr):
    result = greater_val - smaller_val
    if result <= tolr:
        return True

    else:
        return False


result = tolrence(0.128,0.153,0.01)
print(result)
```

```
True
```

In [ ]:
```
x = 0
y= -1
i =0
while i!=10:
    print("\n",i,"Iteration")

    regular_false_m = regular_false(x,y)
    print("Midpoint: ", regular_false_m)


    result = fx2(regular_false_m)
    print("function value:" ,result)

    if result < 0:
        x = regular_false_m
        print("Value of x in ",i," iteration: ",x)

    elif result > 0:
        y = regular_false_m
        print("Value of y in ",i," iteration: ",y)
    i = i+1
    j =i
    if j == 10:
        print("Total iterations:  ", j)

    tol = tolrence(y,x, 0.001)
    #if tol is True:
```

```
    #     break
```

```
 0 Iteration
Midpoint:  -0.706141463718696
function value: -0.8106465235520532
Value of x in  0  iteration:  -0.706141463718696

 1 Iteration
Midpoint:  -0.8511348124350964
function value: -0.07457156398965431
Value of x in  1  iteration:  -0.8511348124350964

 2 Iteration
Midpoint:  -0.8633760026432734
function value: -0.0050415345260026445
Value of x in  2  iteration:  -0.8633760026432734

 3 Iteration
Midpoint:  -0.8641986058175887
function value: -0.00033209312935794655
Value of x in  3  iteration:  -0.8641986058175887

 4 Iteration
Midpoint:  -0.8642527702595201
function value: -2.1837237356936434e-05
Value of x in  4  iteration:  -0.8642527702595201

 5 Iteration
Midpoint:  -0.8642563318229413
function value: -1.4357720578561661e-06
Value of x in  5  iteration:  -0.8642563318229413

 6 Iteration
Midpoint:  -0.8642565659910433
function value: -9.439956794032867e-08
Value of x in  6  iteration:  -0.8642565659910433

 7 Iteration
Midpoint:  -0.8642565813871955
function value: -6.206607616743298e-09
Value of x in  7  iteration:  -0.8642565813871955

 8 Iteration
Midpoint:  -0.8642565823994658
function value: -4.0807363044237377e-10
Value of x in  8  iteration:  -0.8642565823994658

 9 Iteration
Midpoint:  -0.8642565824660208
function value: -2.6830204724603846e-11
Value of x in  9  iteration:  -0.8642565824660208
Total iterations:   10
```

In [ ]: