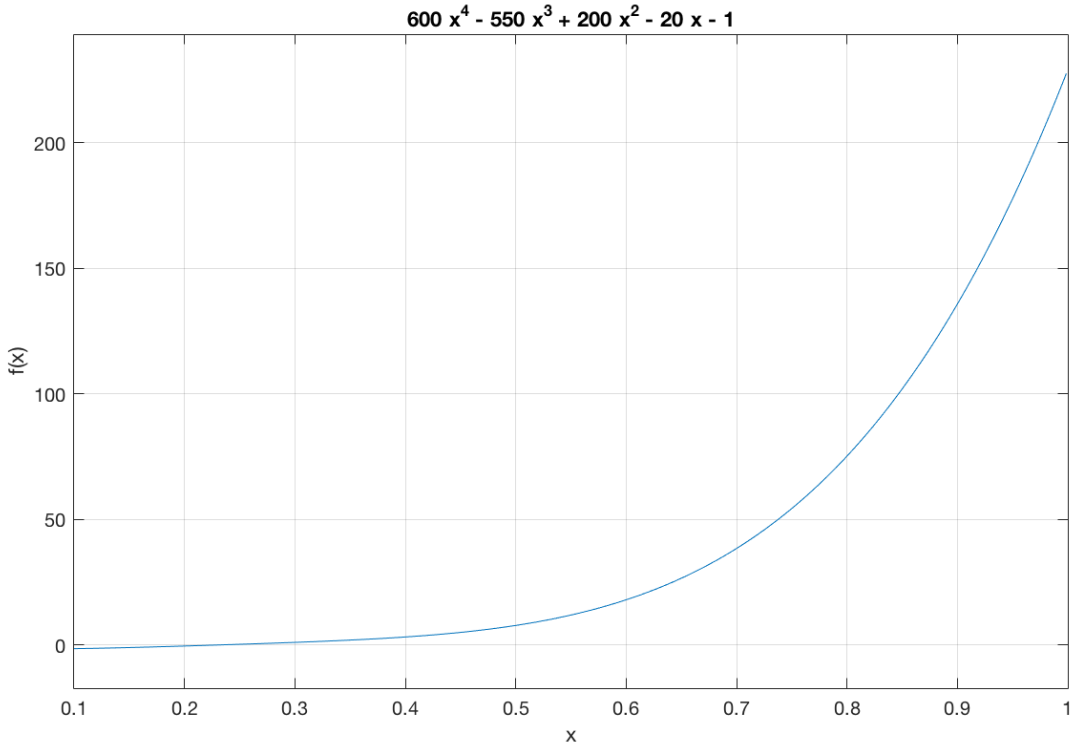
ESO208 - Computer Assignment 1

Name: Gurpreet Singh **Roll No:** 150259

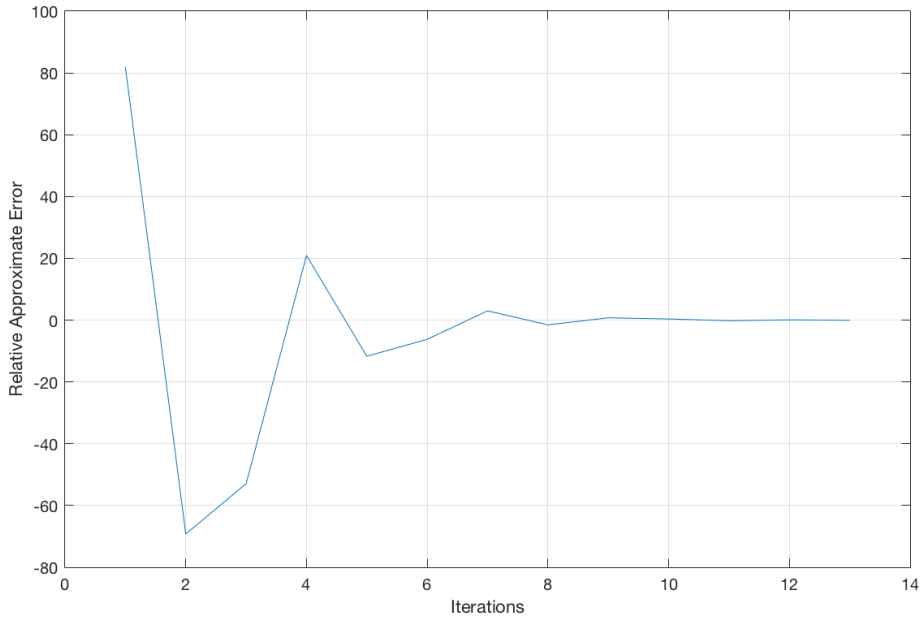
Q1. Solving an Equation using Bracketing and Open Methods

$f(x) = 600x^4 - 550x^3 + 200x^2 - 20x - 1 = 0$



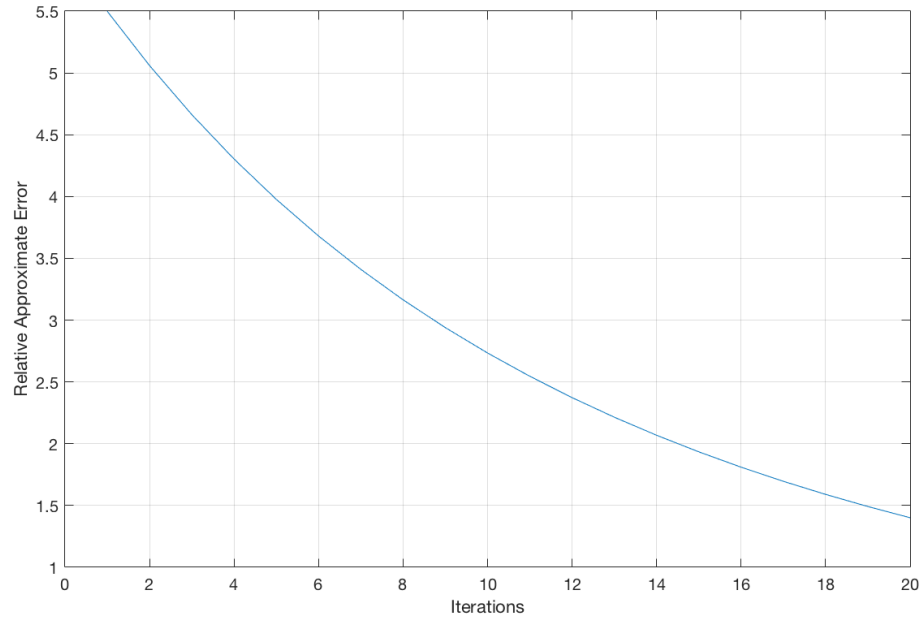
Bisection Method

```
Solution: 0.232385253906250
```



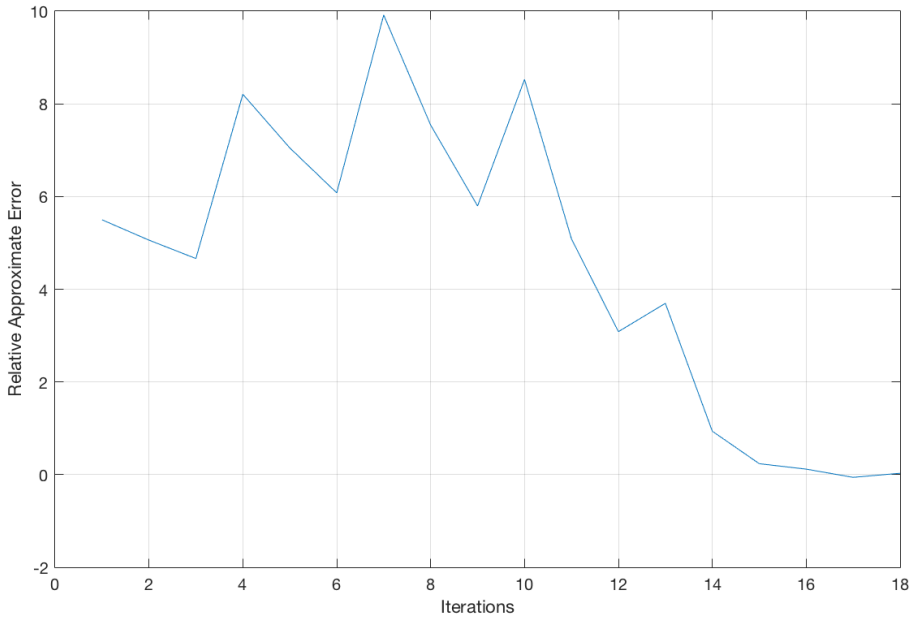
False-Position Method

```
Solution: 0.181460190072870
```



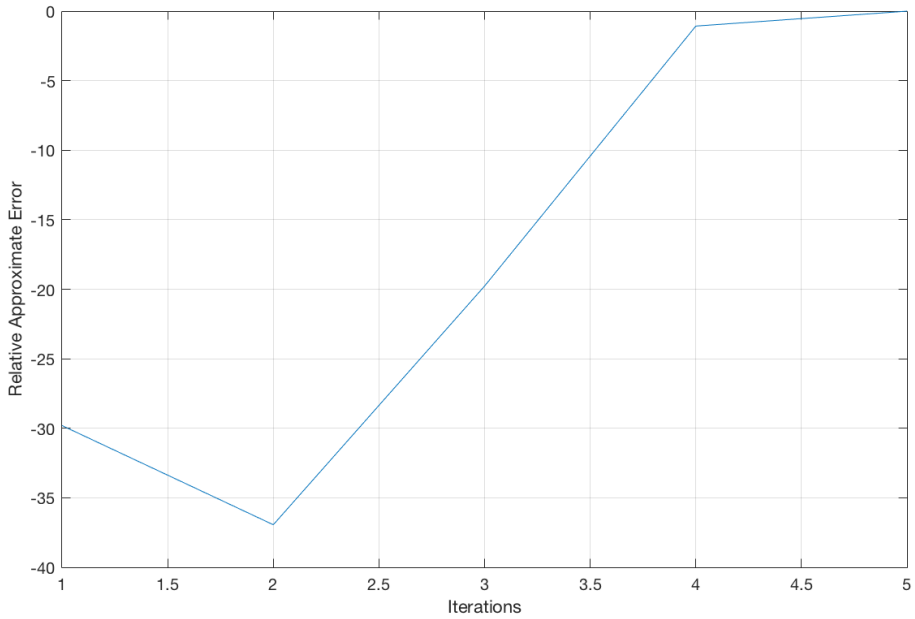
Modified False-Position Method

```
Solution: 0.232375629934491
```



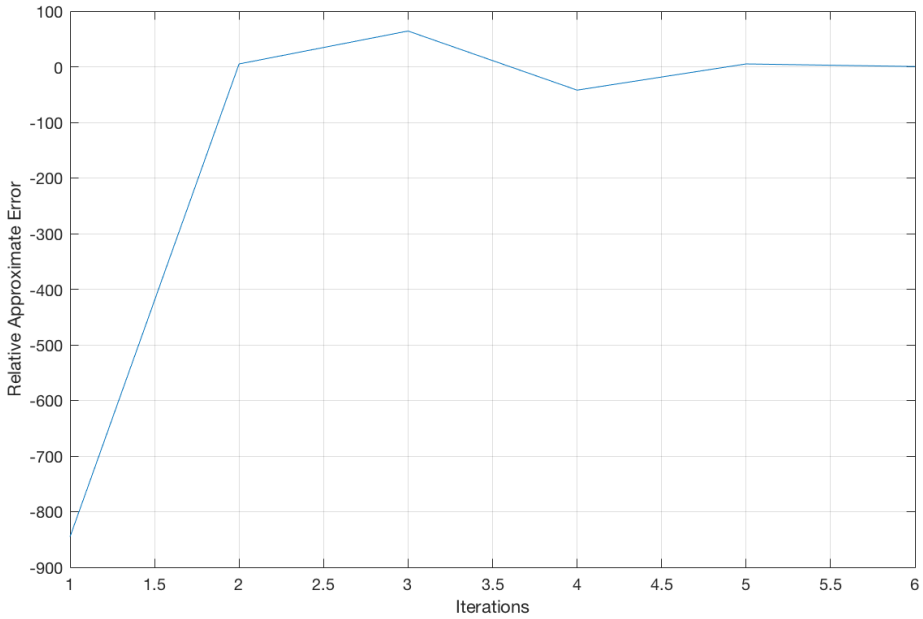
Newton-Raphson Method

```
Solution: 0.232352964768764
```

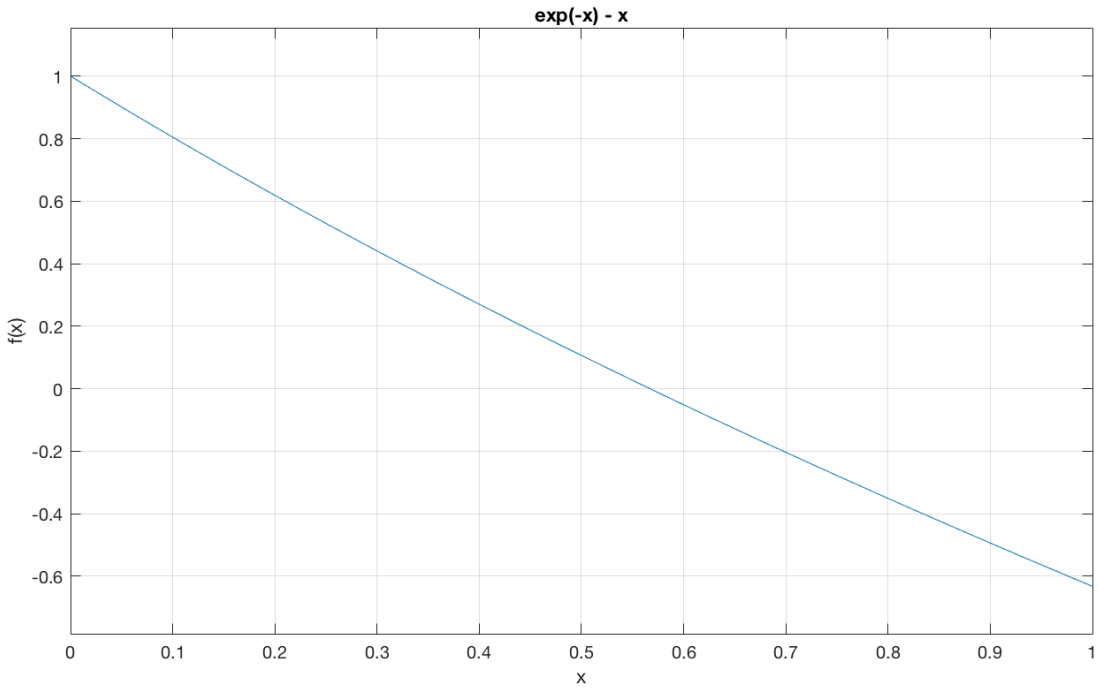


Secant Method

```
Solution: 0.232352956733991
```

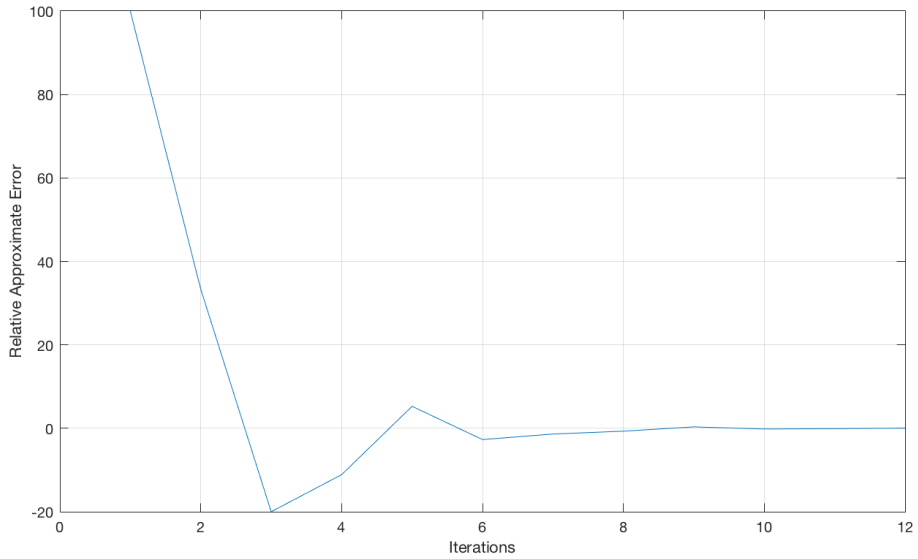


$f(x) = e^{-x} - x = 0$



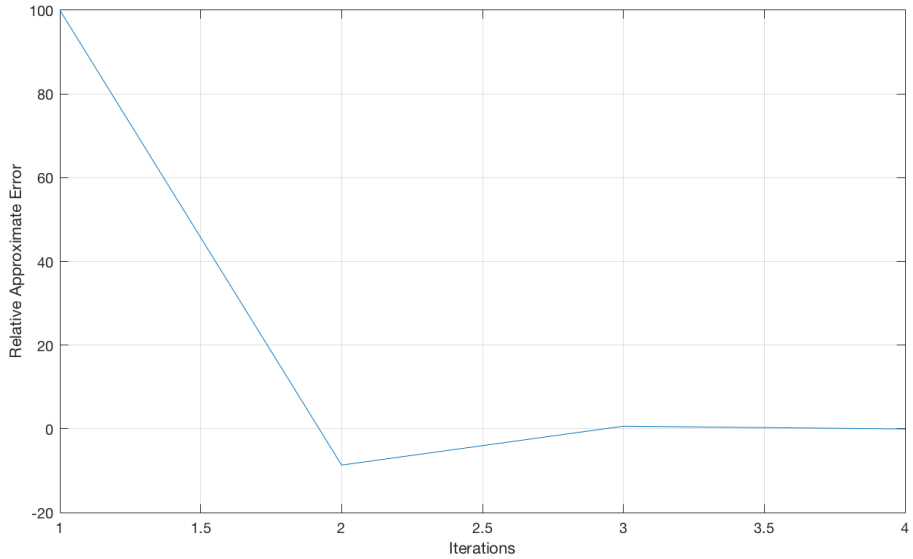
Bisection Method

```
Solution: 0.567138671875000
```



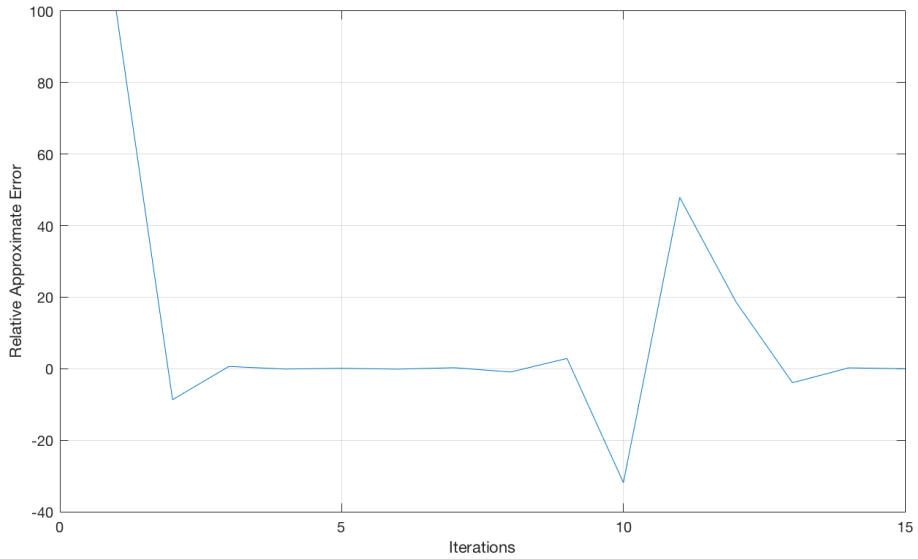
False-Position Method

```
Solution: 0.567125605548578
```



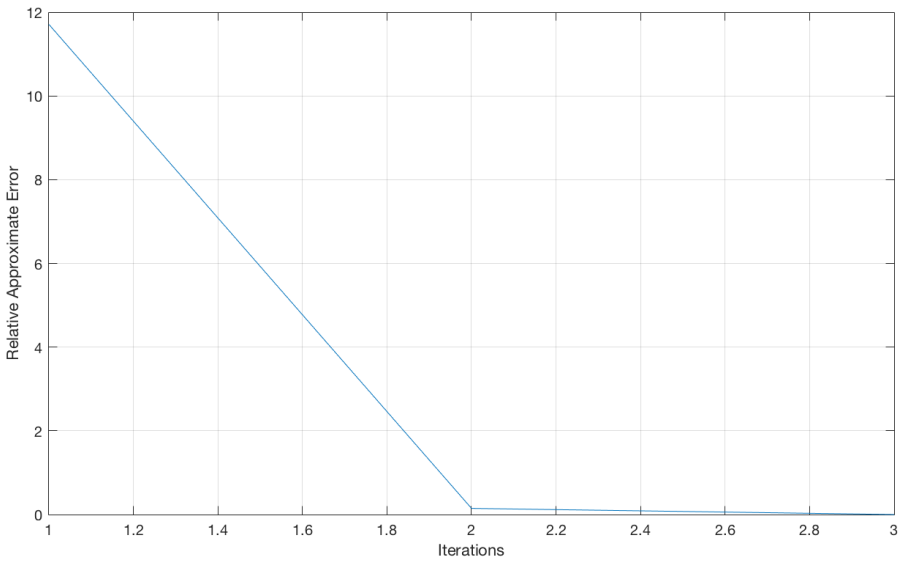
Modified False-Position Method

```
Solution: 0.999989886106003
```



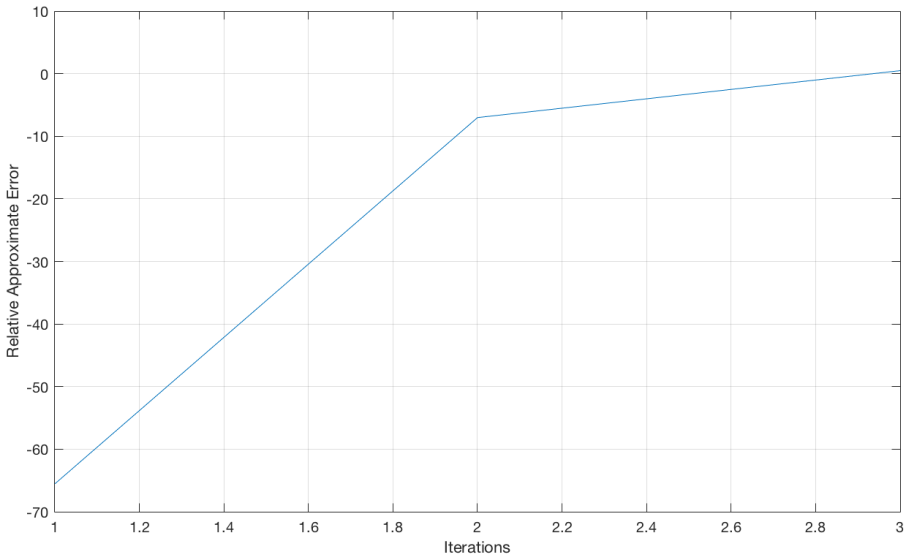
Newton-Raphson Method

```
Solution: 0.567143290409781
```



Secant Method

```
Solution: 0.567143299083762
```

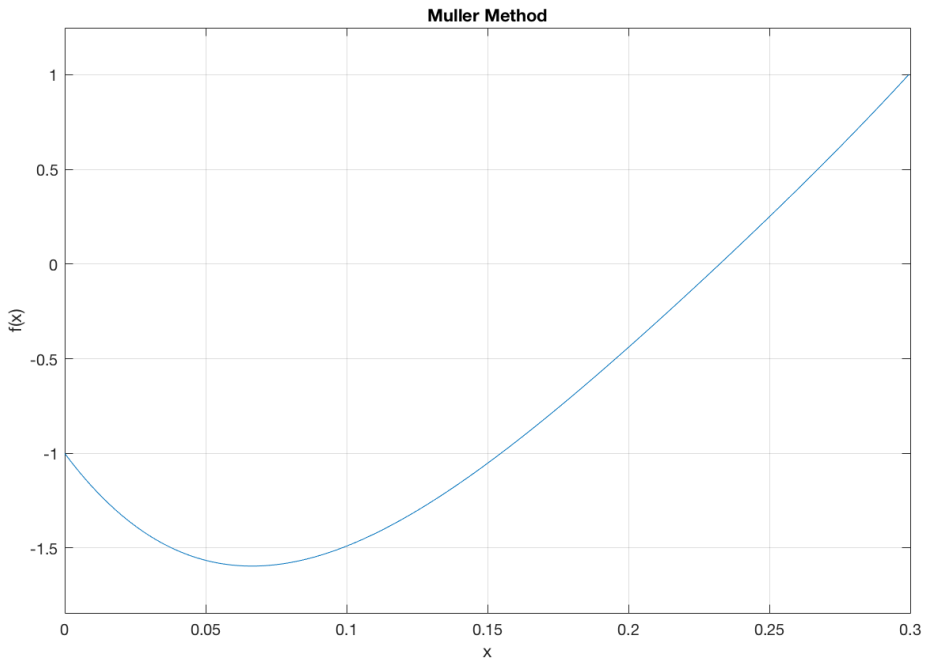


Q2. Solving a Polynomial using Hybrid Methods

$f(x) = 600x^4 - 550x^3 + 200x^2 - 20x - 1 = 0$

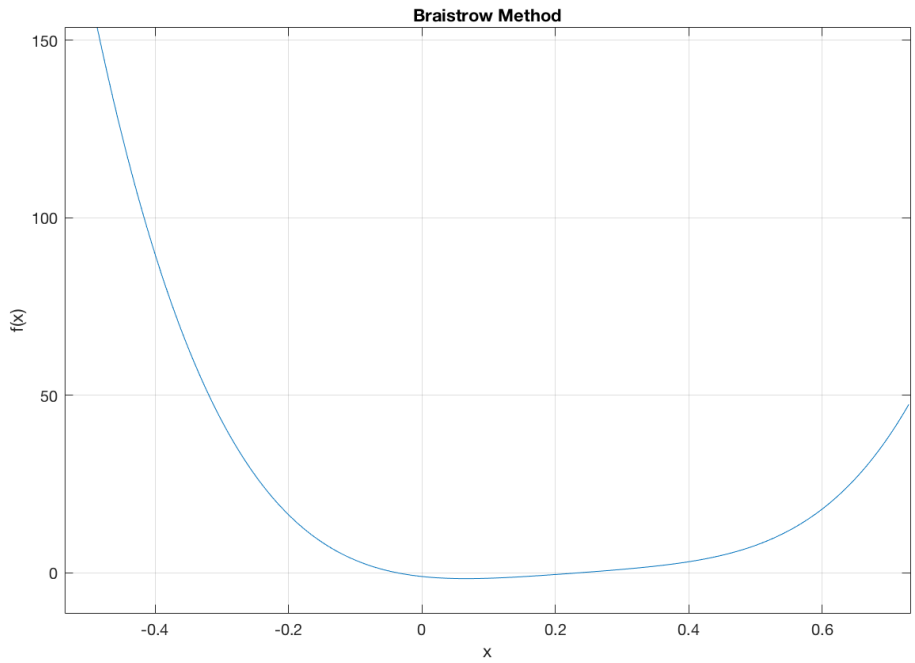
Muller's Method

```
Solution: 0.232352964760914
```



Braistrow's Method

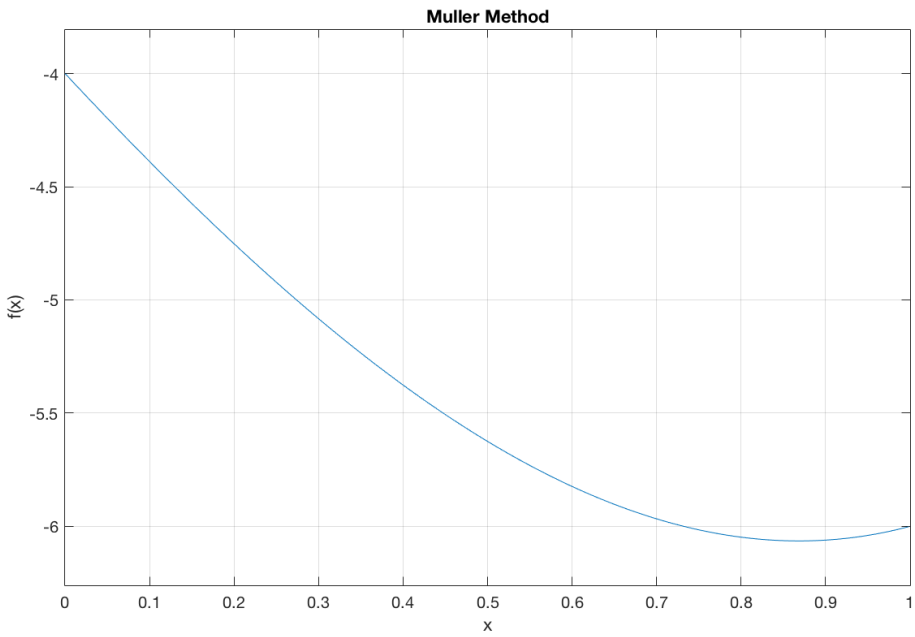
```
Solution: -0.035839691866268 and 0.232352964749917
```



$f(x) = x^3 + x^2 - 4x - 4 = 0$

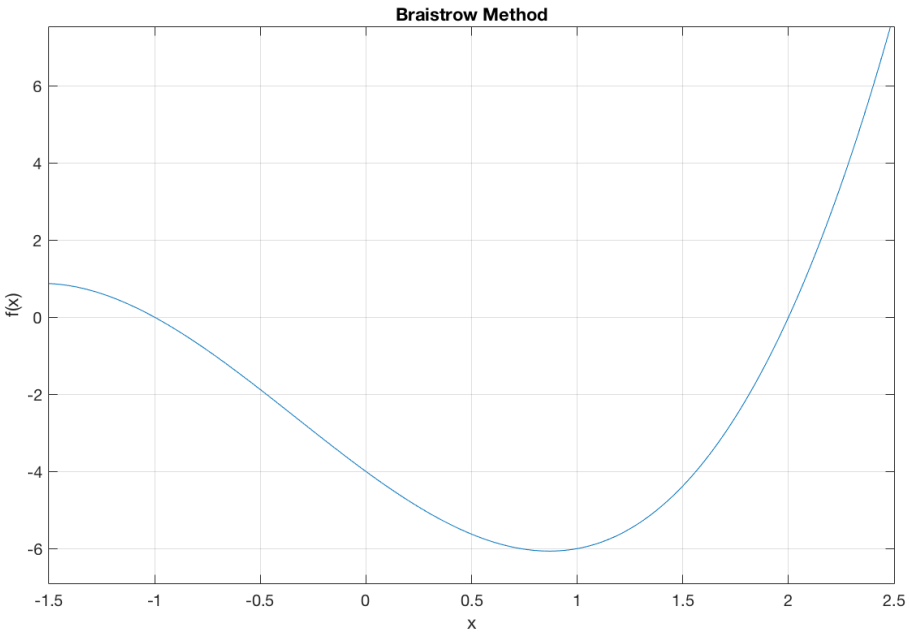
Muller's Method

```
Solution: 2.000000000053570
```



Braistrow's Method

```
Solution: -1 and 2
```


Braistrow Method
f(x)
x
6
4
2
0
-2
-4
-6
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5