

# Plotting Roots Question No. 4

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## 1 Introduction

C++ code was used to obtain the roots and then gnuplot was used to plot the data. The C++ code, gnuplot scripts, plots and .dat files containing roots are present in "plotting\_data" folder.

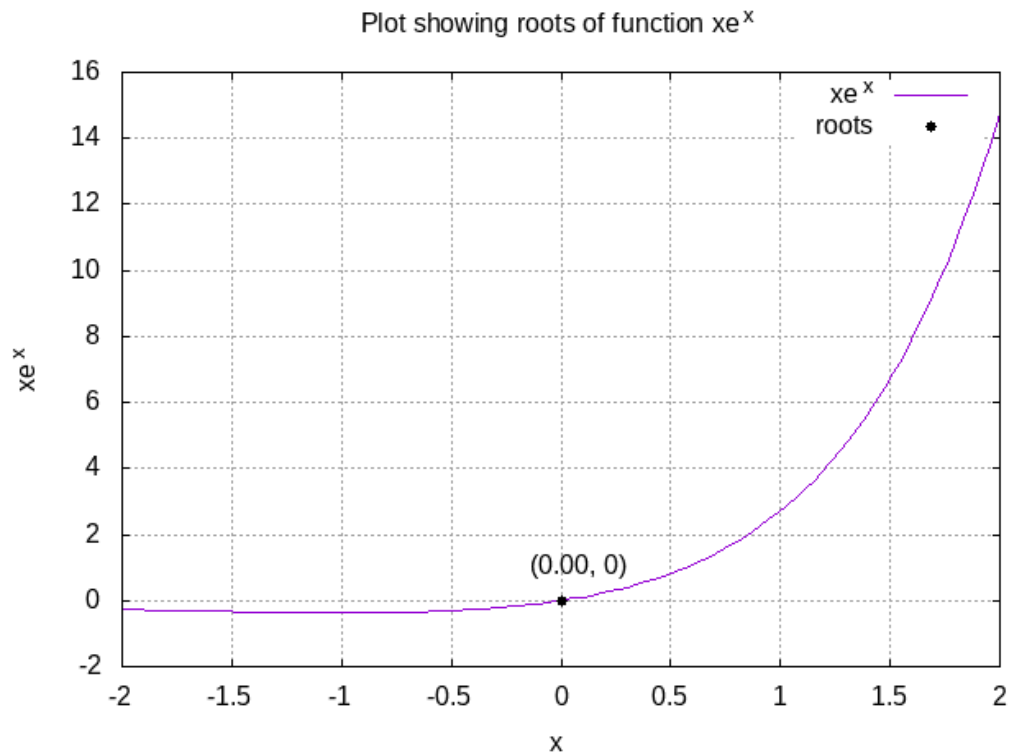
## 2 Plots

### 2.1 Problem a) $xe^x$

#### 2.1.1 Parameters

start\_point : -2  
end\_point : 2  
increment : 4  
 $\epsilon$  :  $10^{-9}$ ;

#### 2.1.2 Plot

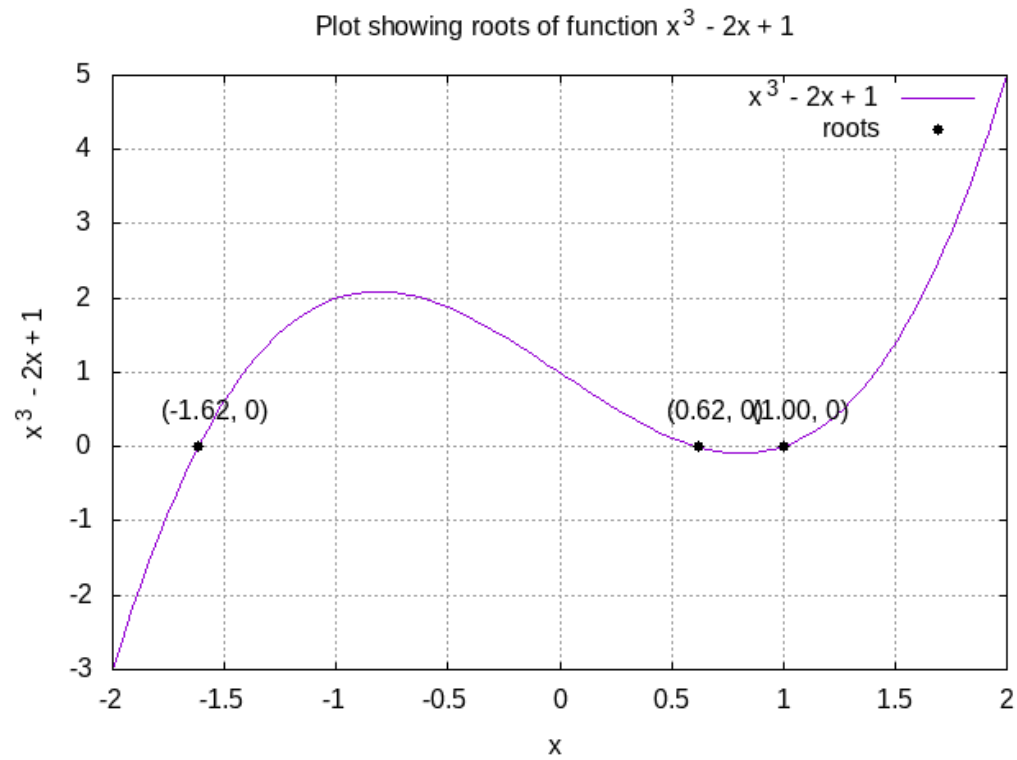


## 2.2 Problem b) $x^3 - 2x + 1$

### 2.2.1 Parameters

start\_point : -2  
end\_point : 2  
increment : 0.5  
 $\epsilon$  :  $10^{-9}$ ;

### 2.2.2 Plot

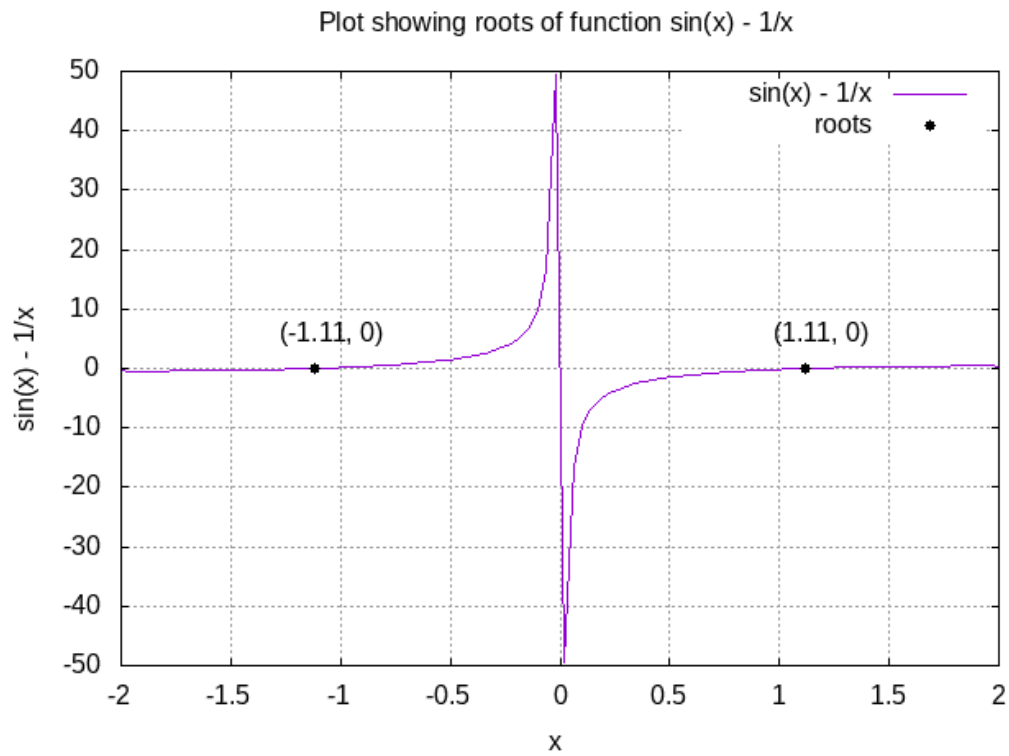


## 2.3 Problem c) $\sin(x) - \frac{1}{x}$

### 2.3.1 Parameters

start\_point : -2  
end\_point : 2  
increment : 0.5  
 $\epsilon$  :  $10^{-9}$ ;

### 2.3.2 Plot



## 3 Comments

- Code used in Question No. 3 is modified to obtain the roots for all questions.
- For problem c) due to termination condition the code was caught in infinite loop so the code was modified to handle this condition.