

Function Plotter

- This project is for Master Micro Company.
- Language: Python
- Development environment: PyCharm
- Project type: Desktop Application

Aim

plots arbitrary user-entered function.

Procedure Details

1. Write a Python GUI program that plots an arbitrary user-entered function.
2. Take a function of x from the user, e.g., $5x^3 + 2x$.
3. Take min and max values of x from the user.
4. The following operators must be supported: $+$ $-$ $/$ $*$ $^$ \sin \cos \tan .
5. Apply appropriate input validation to the user input.
6. Display messages to the user to explain any wrong input.

Extra Features

1. support \sin , \cos , \tan , $\sqrt{}$ and e
2. user can enter constant instead of expression of x
3. user can enter function in any one of this forms
 - $y = \text{expression}$
 - expression
4. add features provided by NavigationToolbar2QT like
 - saving the plot to a file
 - panning and zooming the plot
 - resetting the view

Output

fx

Function Plotter

— □ ×

Equation

Min x

Max x

Plot

Reset

fx Function Plotter

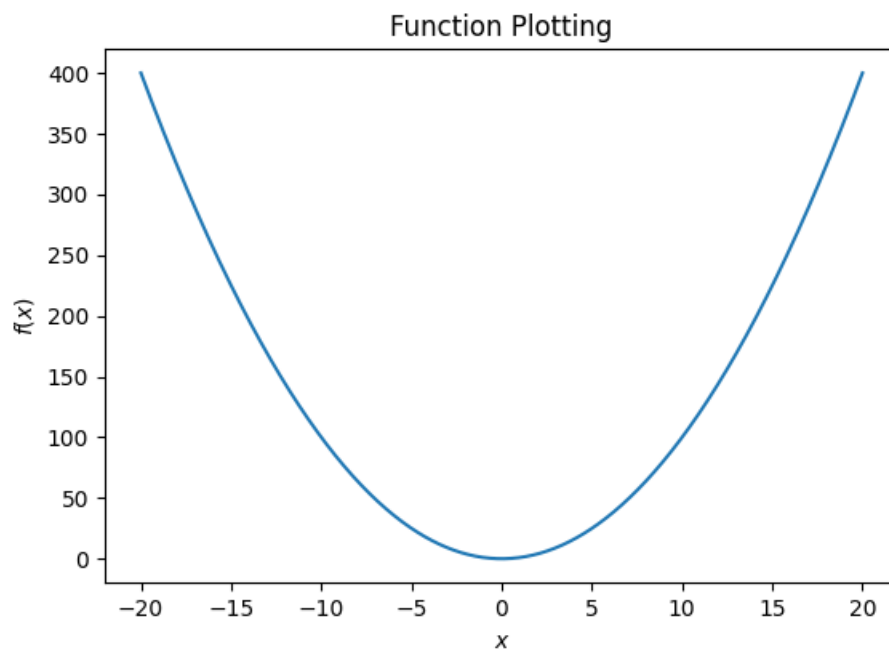
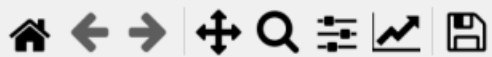
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

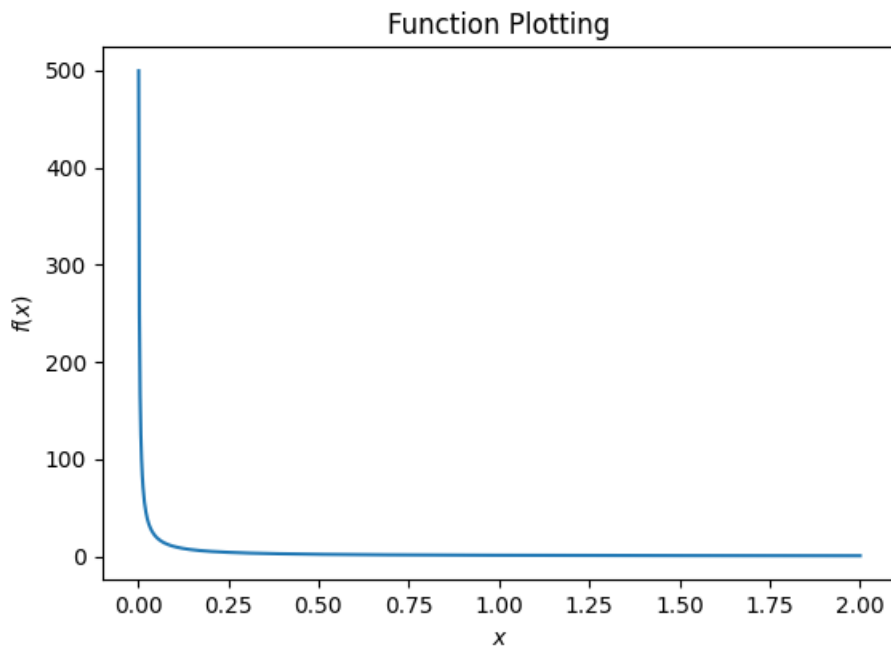
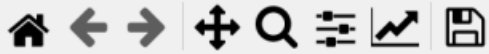
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

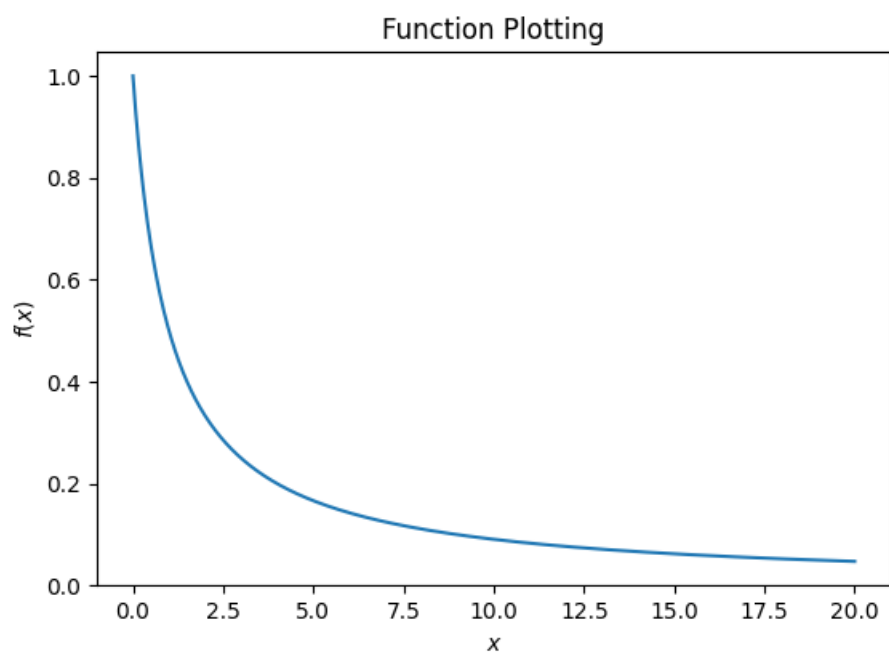
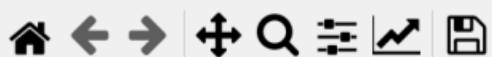
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

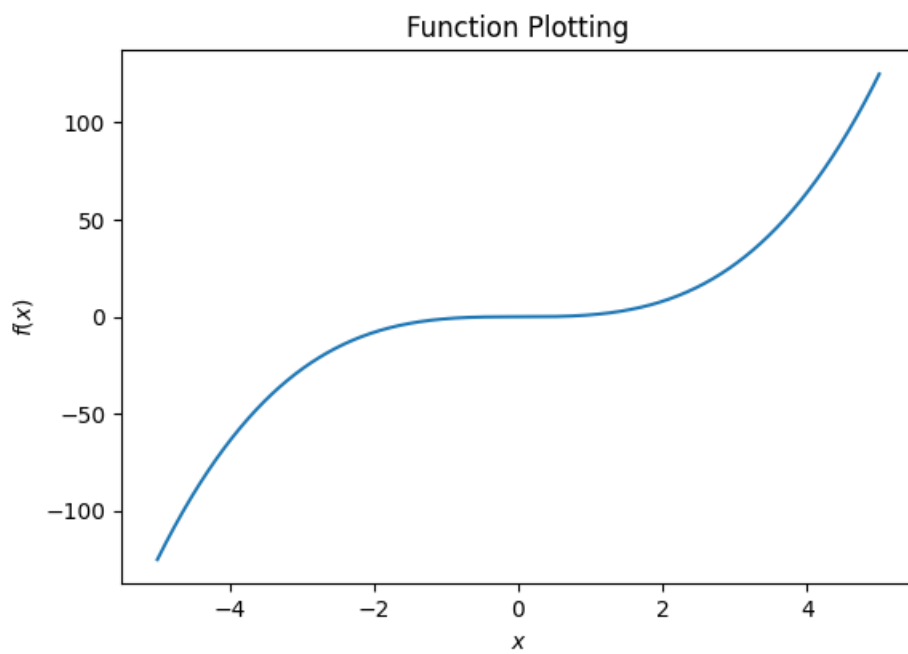
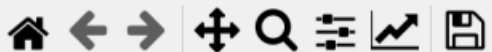
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

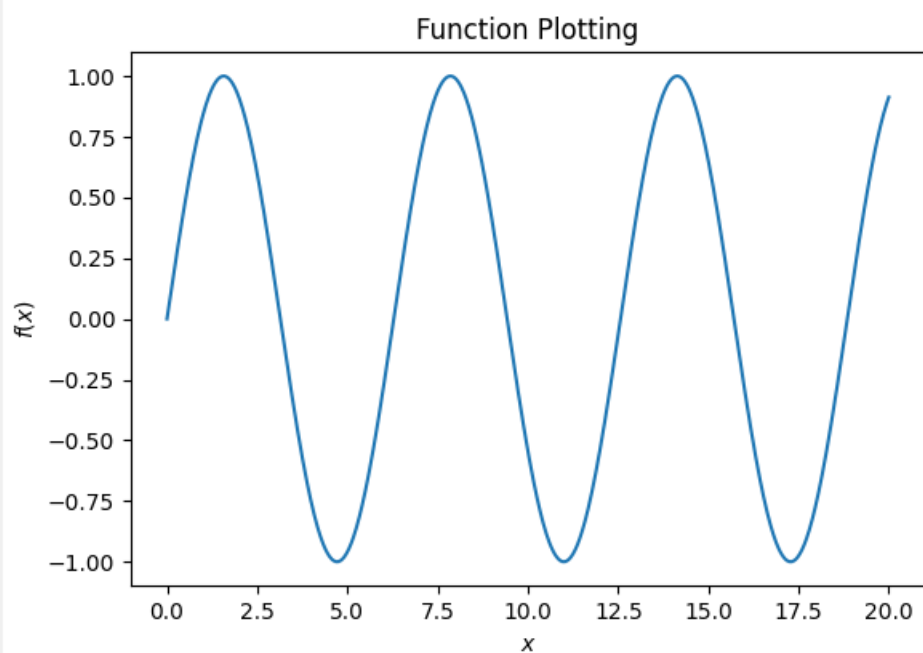
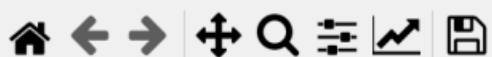
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

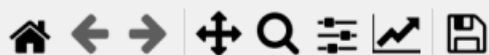
Equation

Min x

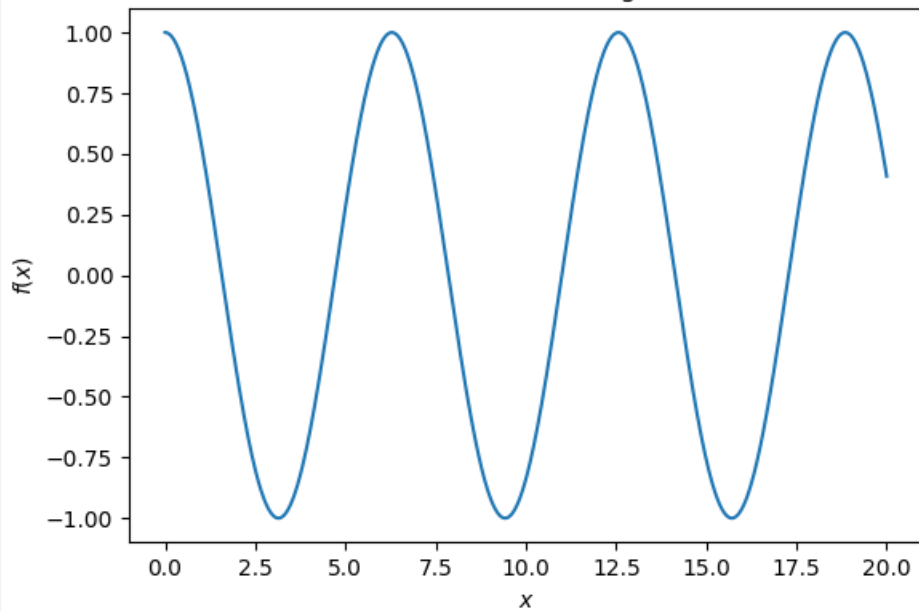
Max x

Plot

Reset



Function Plotting



fx Function Plotter

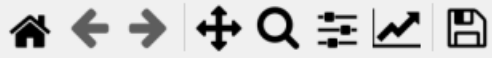
Equation

Min x

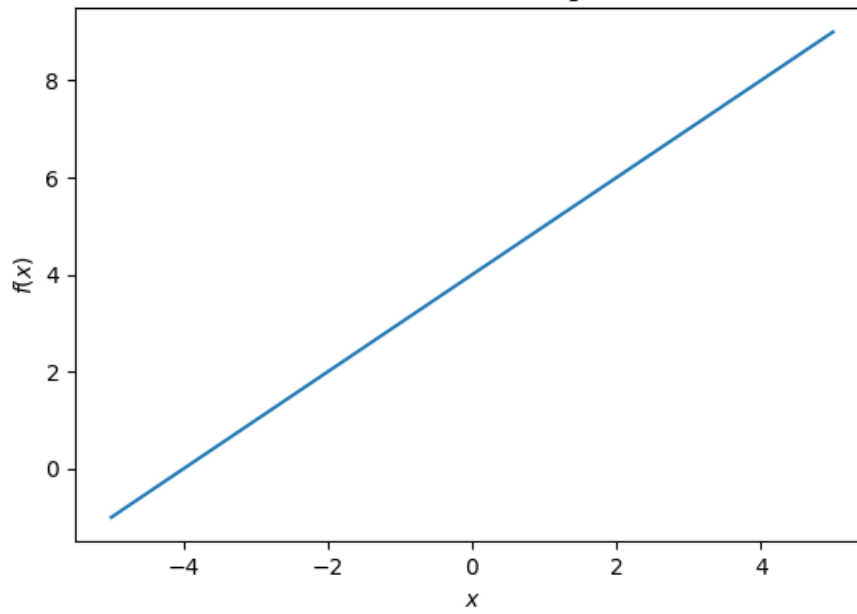
Max x

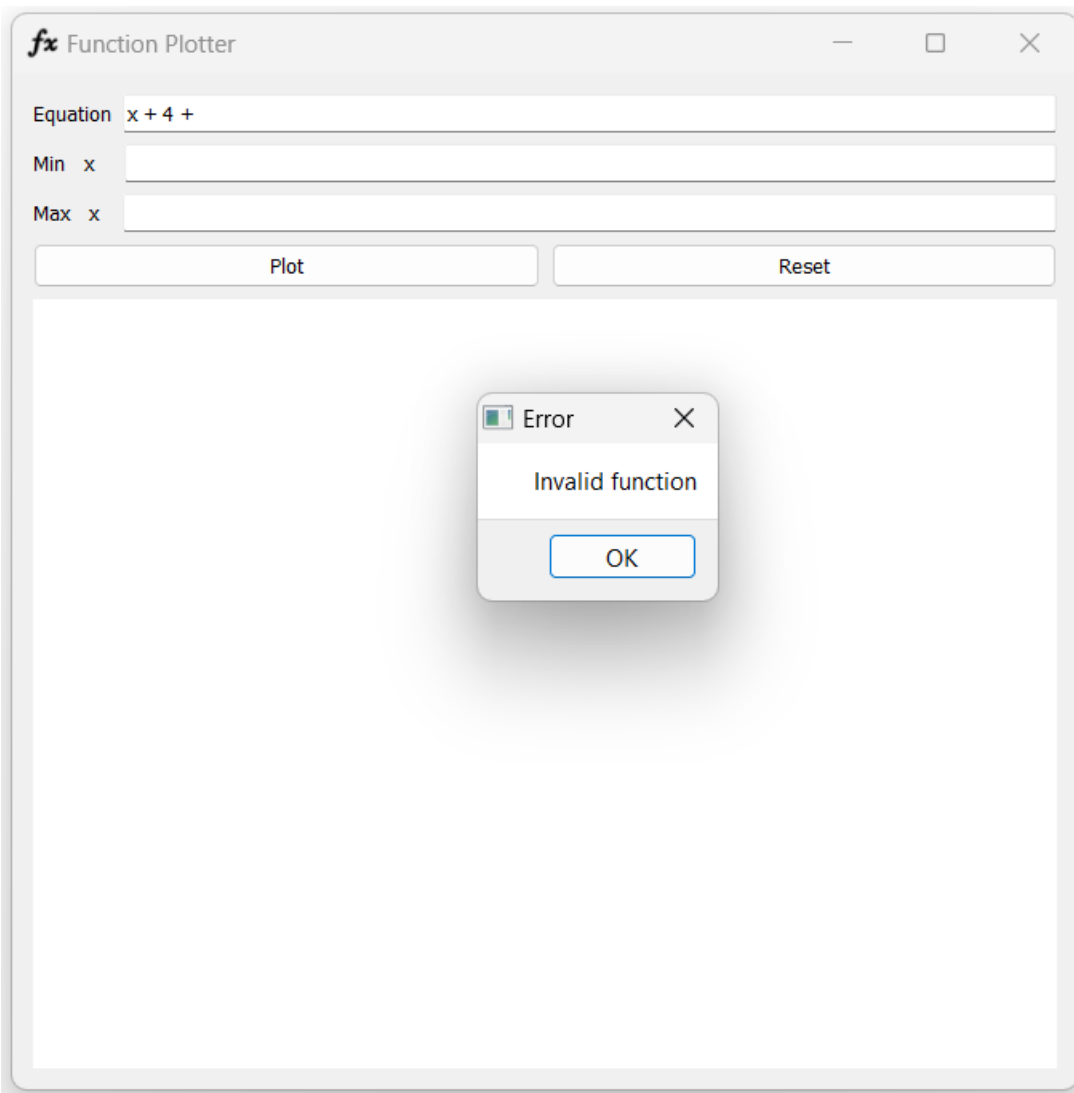
Plot

Reset



Function Plotting





fx Function Plotter

Equation

Min x

Max x

Plot

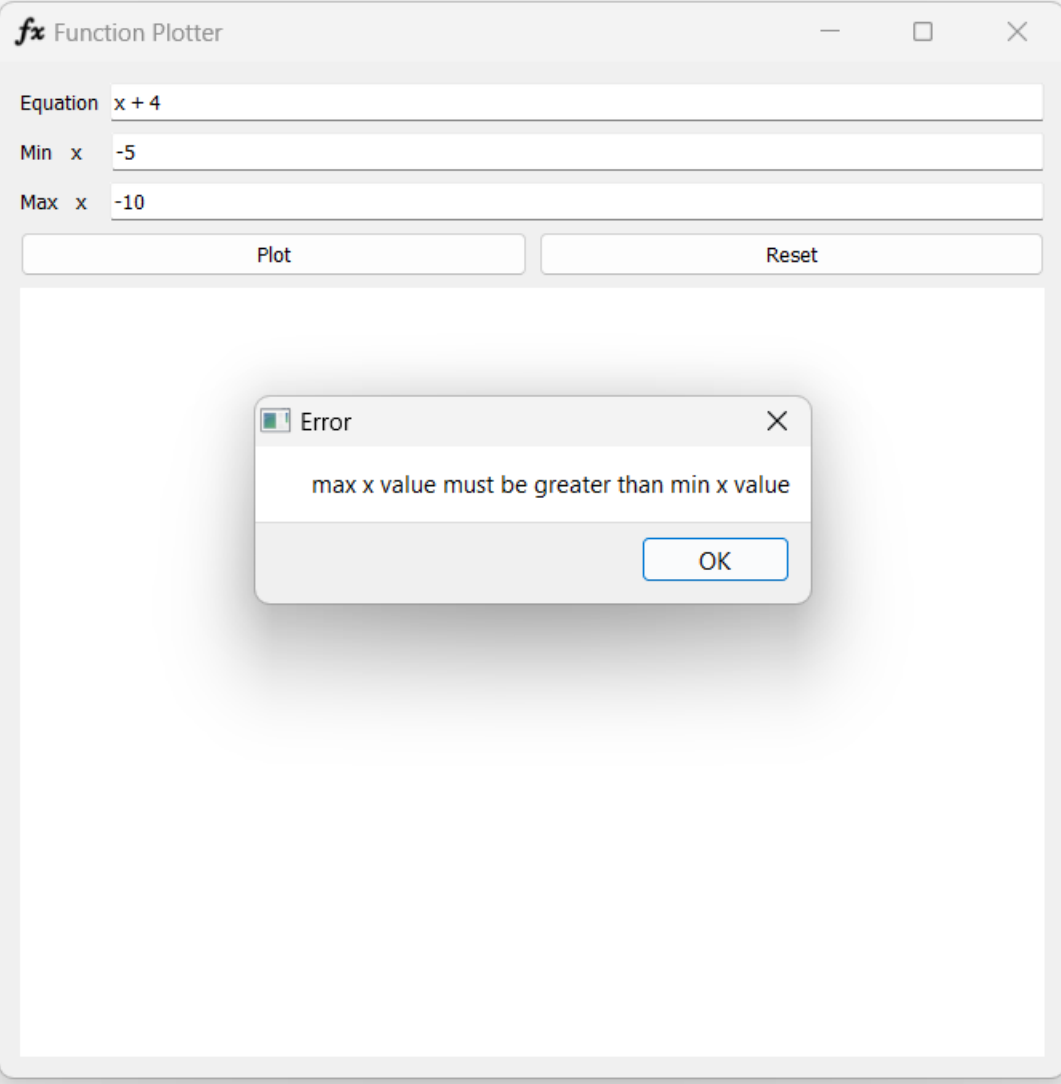
Reset

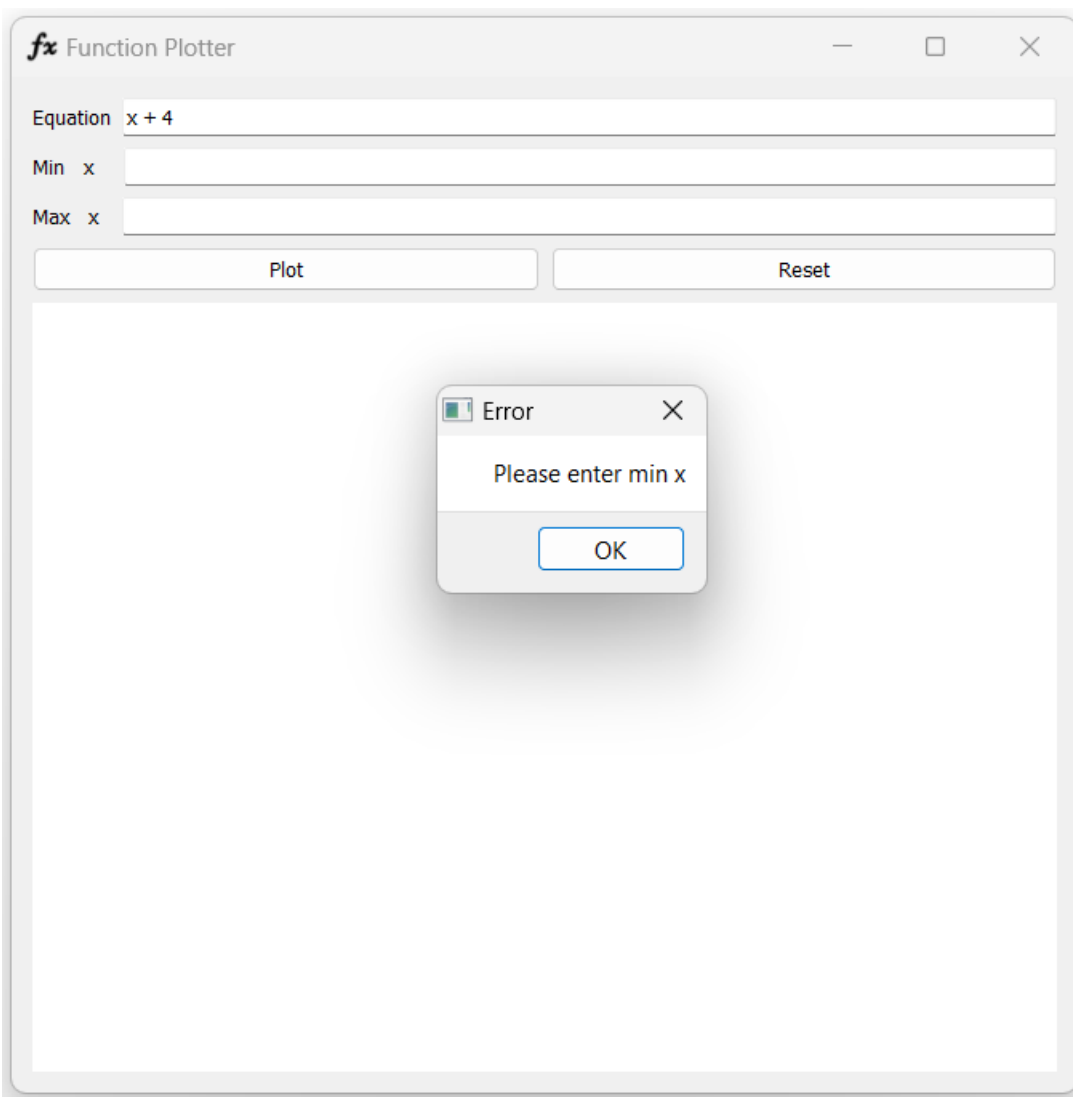
Error

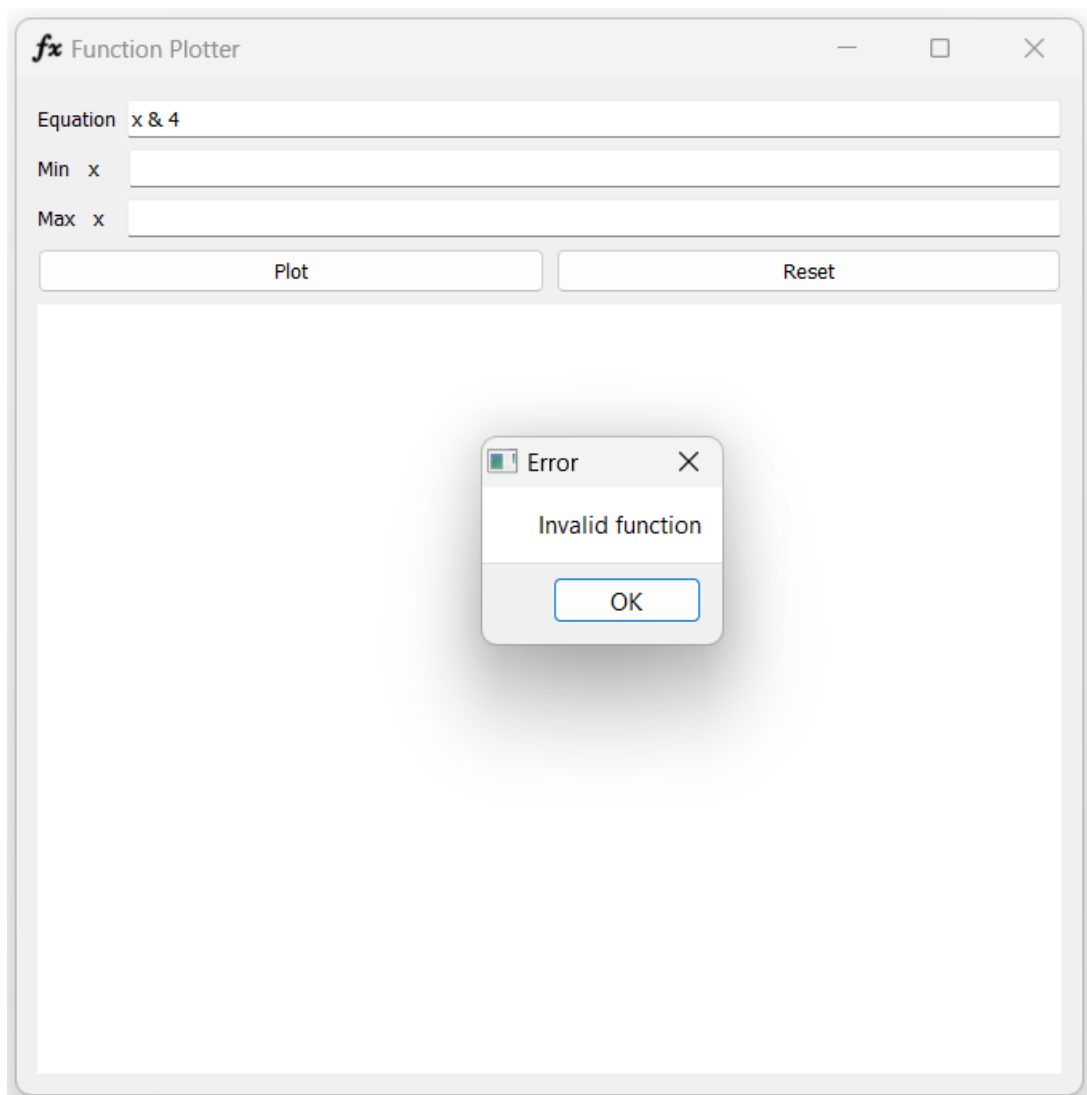
×

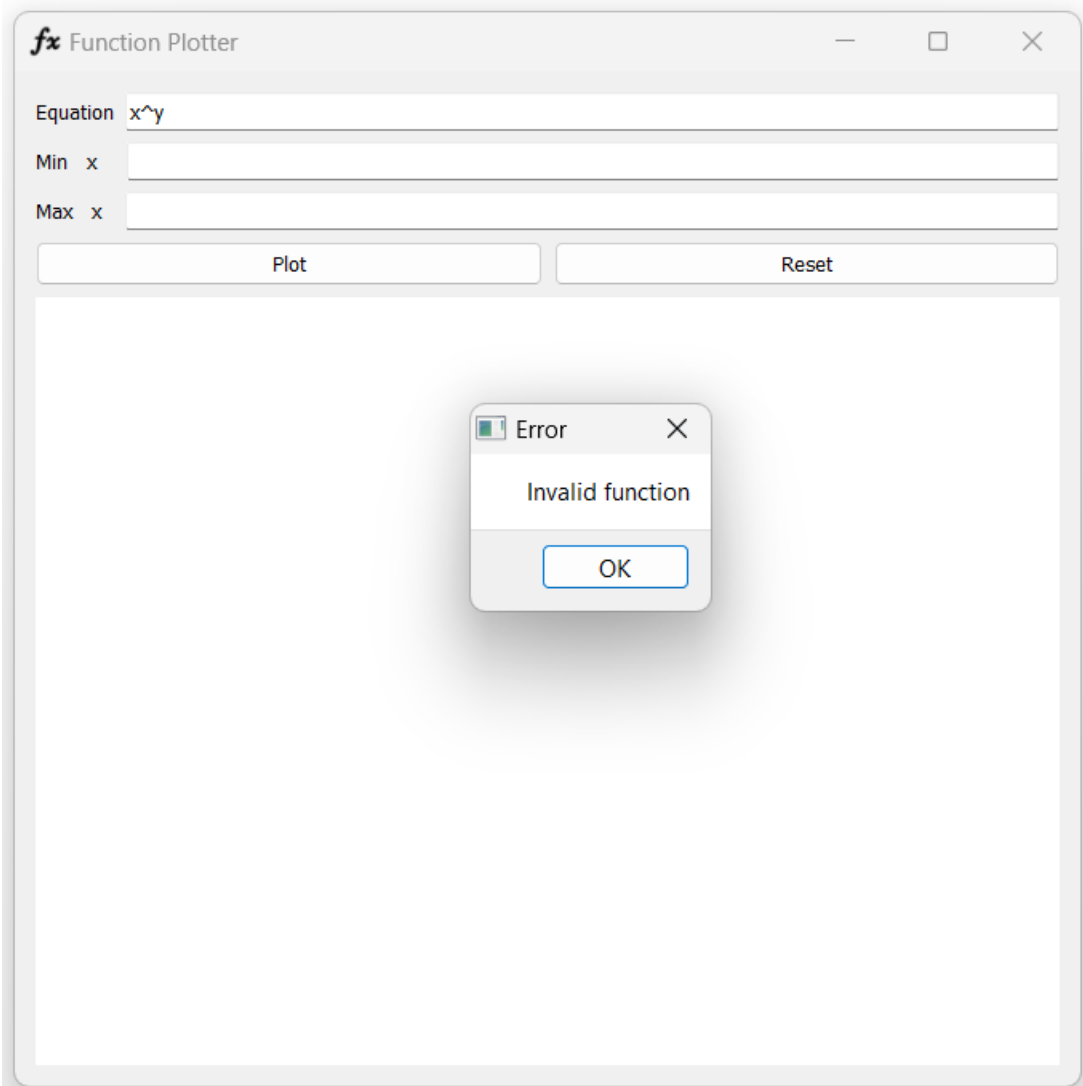
Please enter max x

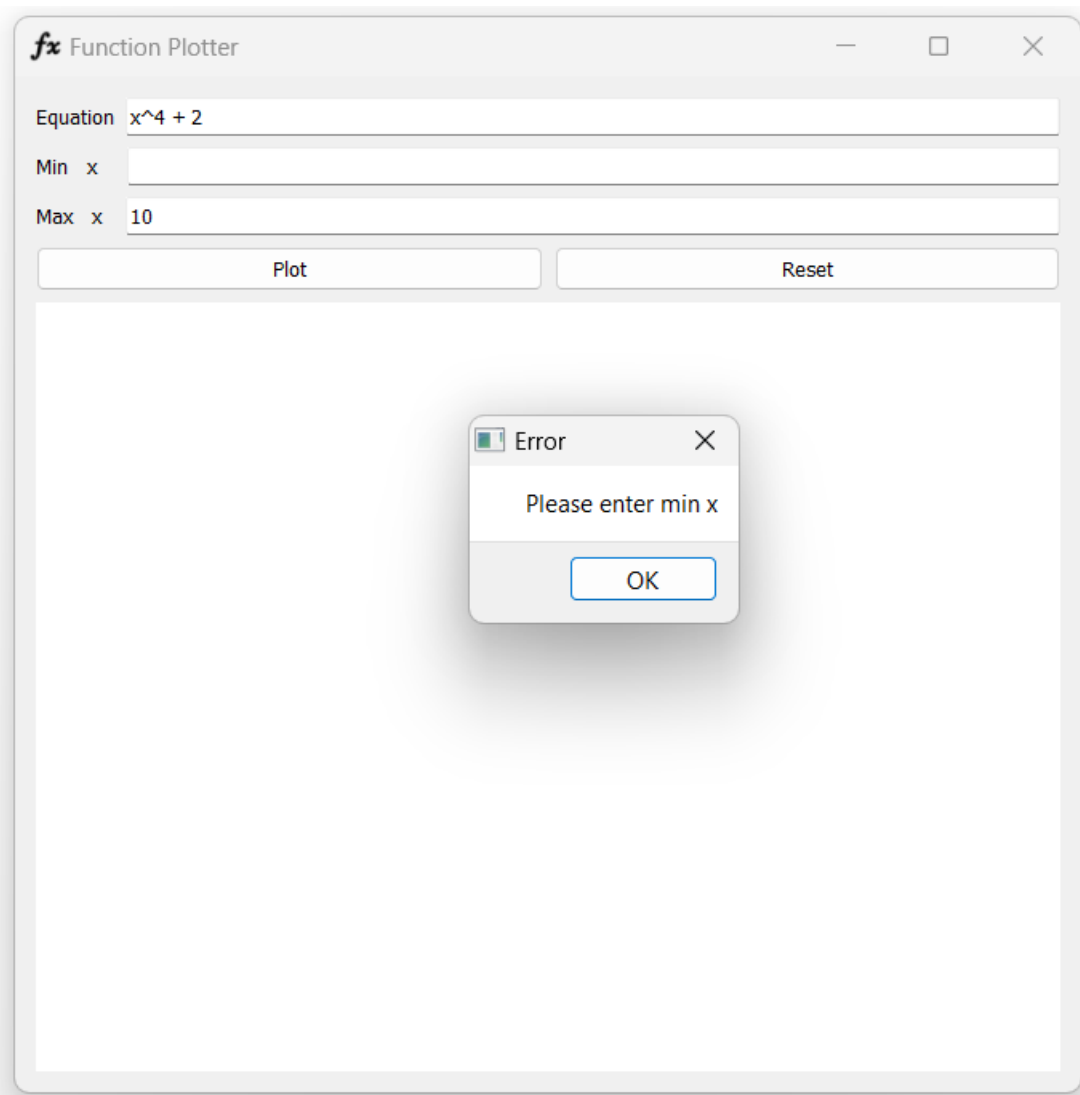
OK

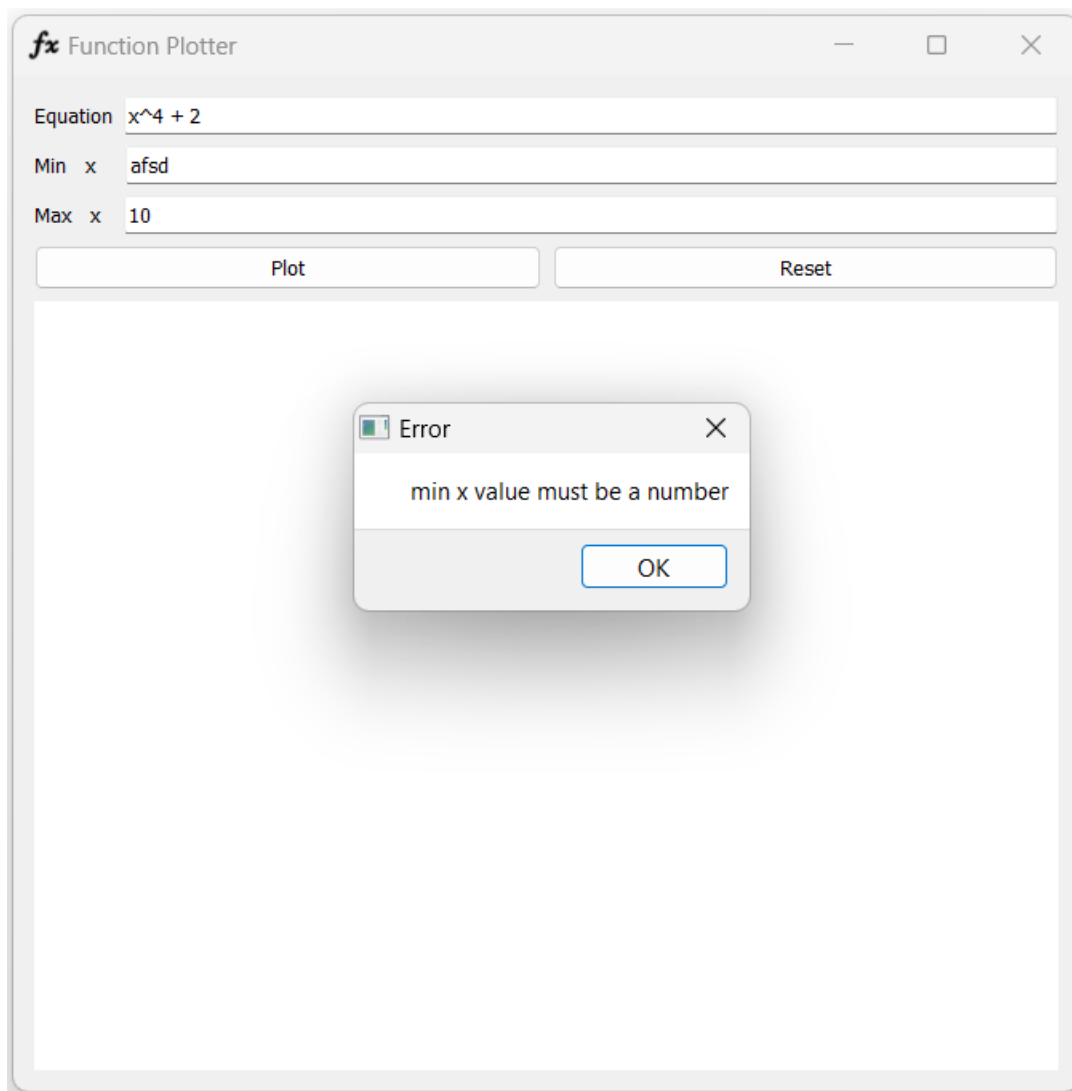


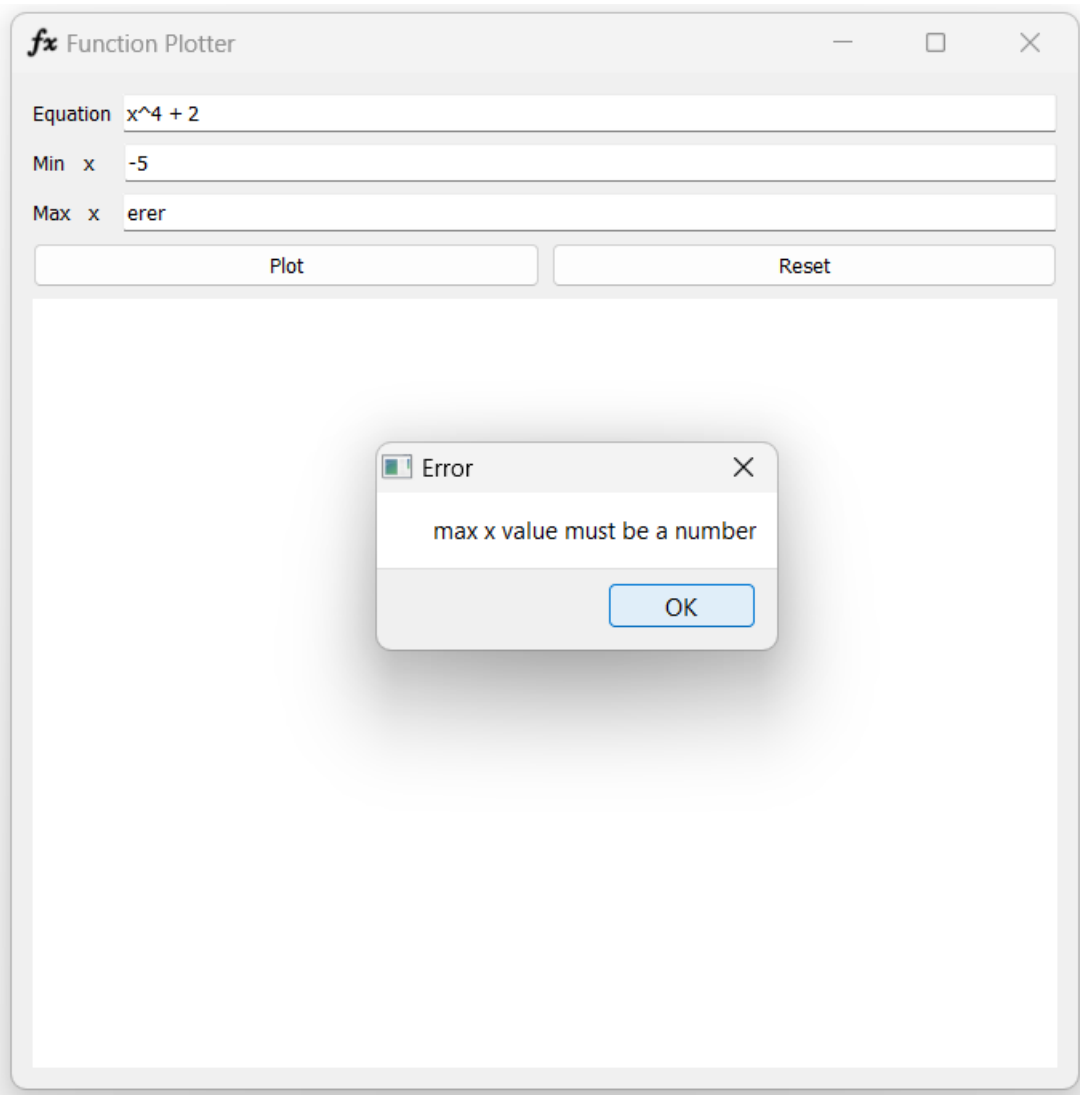


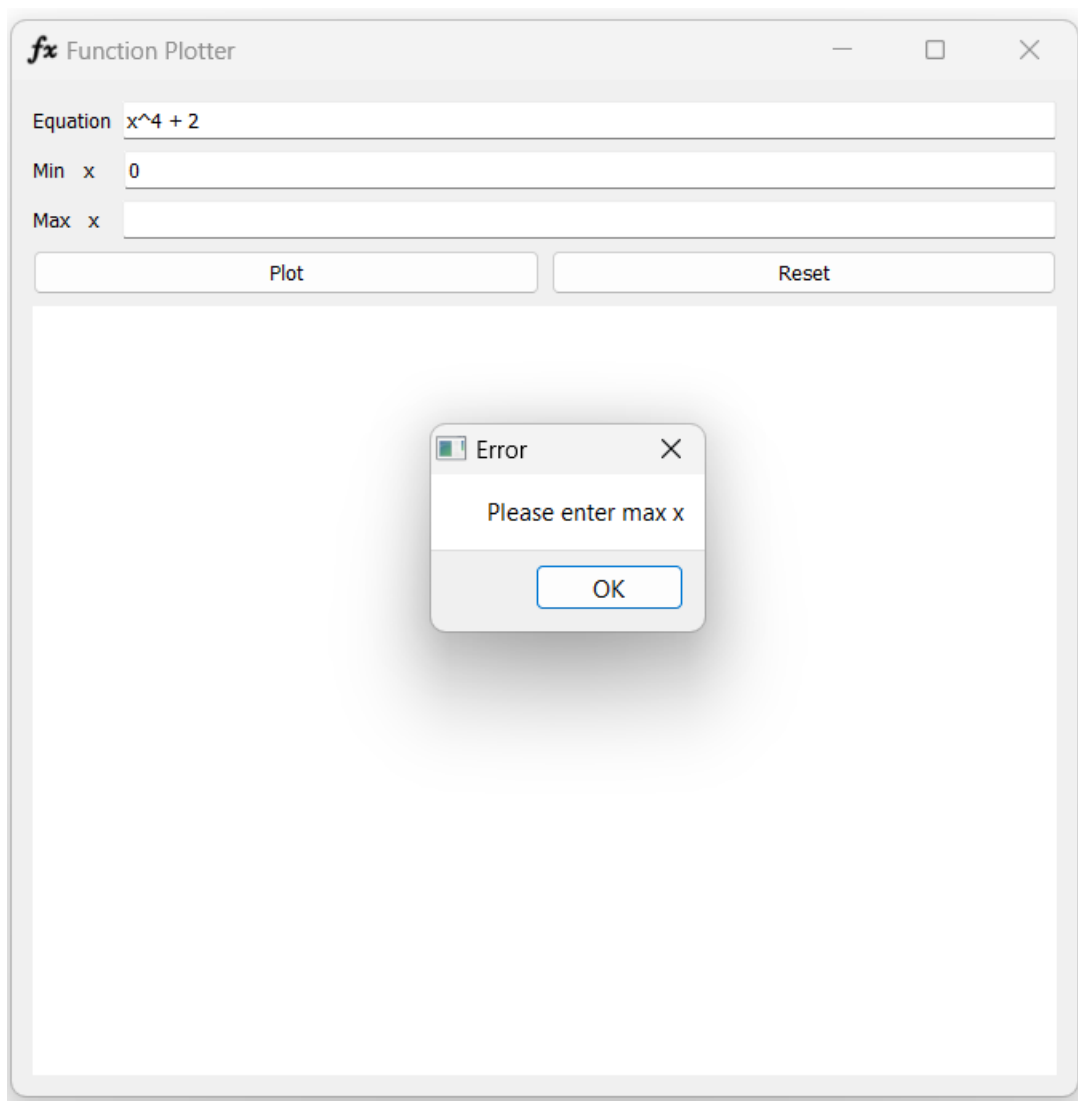












fx Function Plotter

Equation

Min x

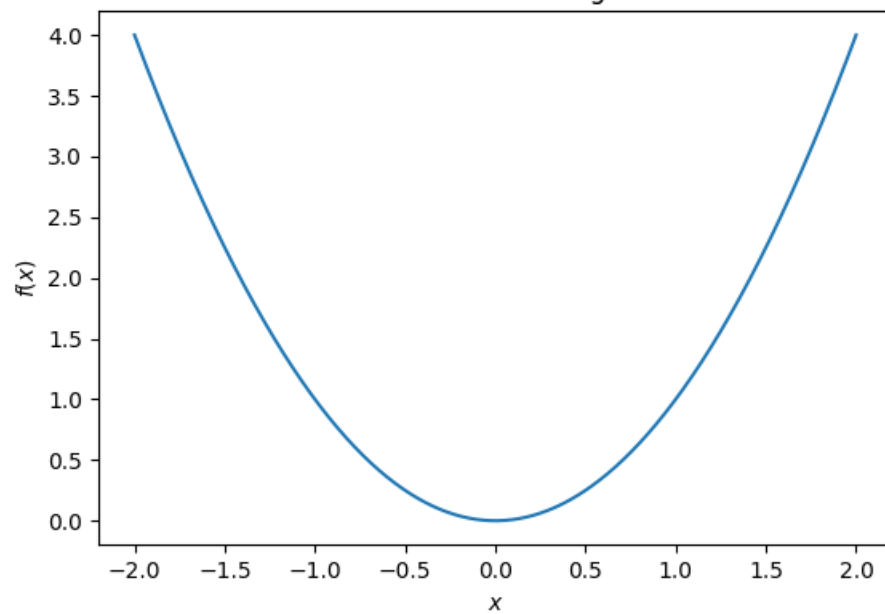
Max x

Plot

Reset



Function Plotting



fx Function Plotter

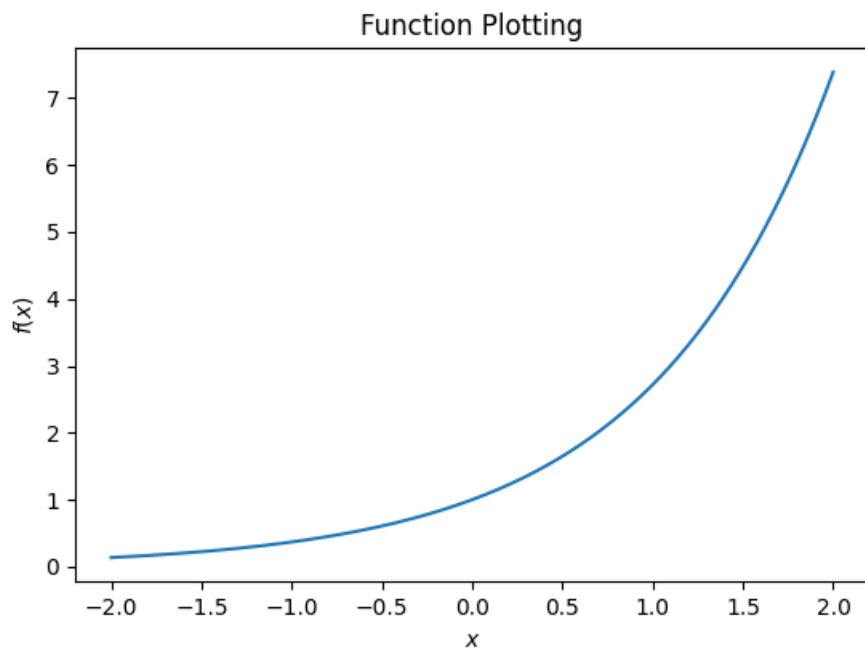
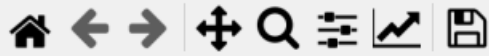
Equation $y = e^x$

Min x -2

Max x 2

Plot

Reset



fx Function Plotter

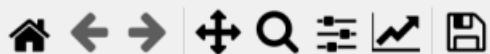
Equation $y = e^{-x}$

Min x 0

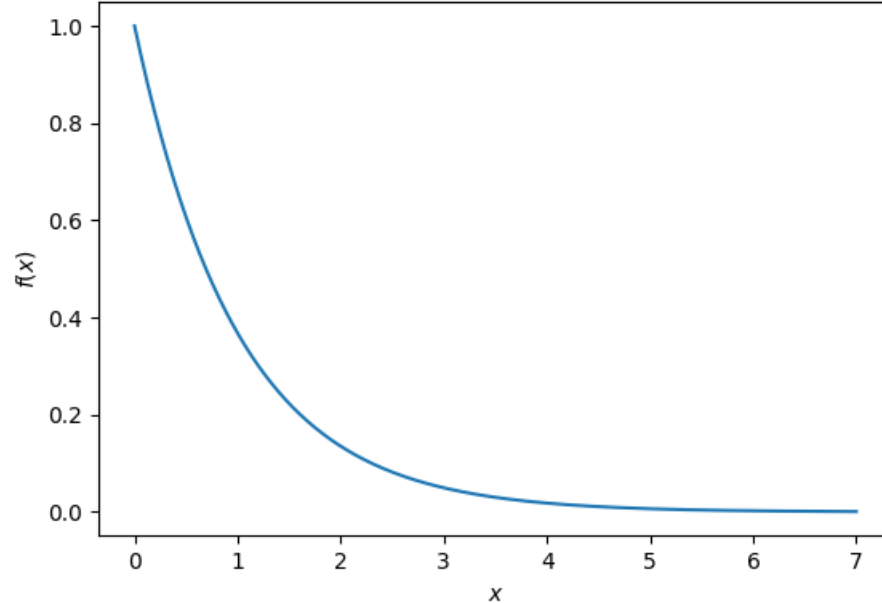
Max x 7

Plot

Reset



Function Plotting



fx Function Plotter

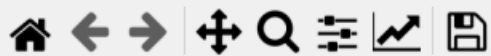
Equation

Min x

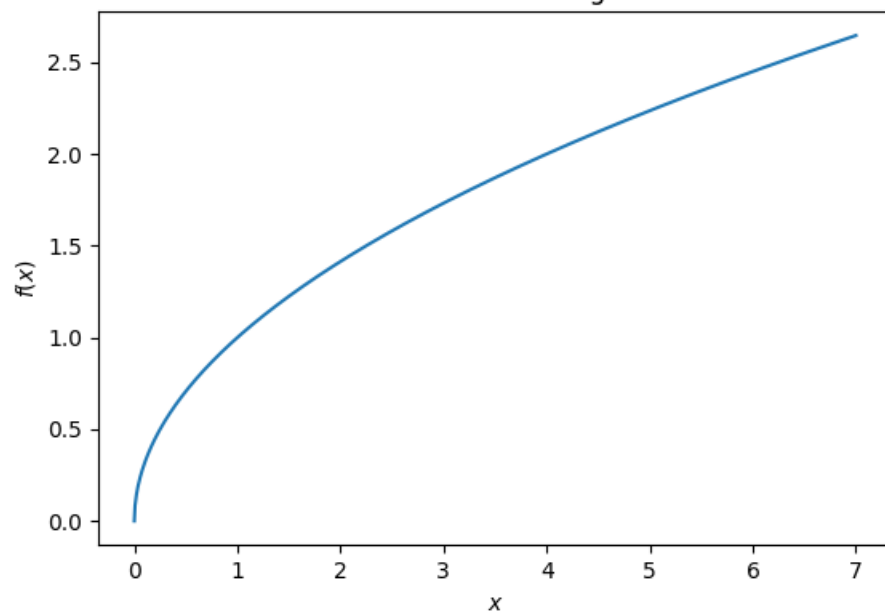
Max x

Plot

Reset



Function Plotting



fx Function Plotter

Equation

Min x

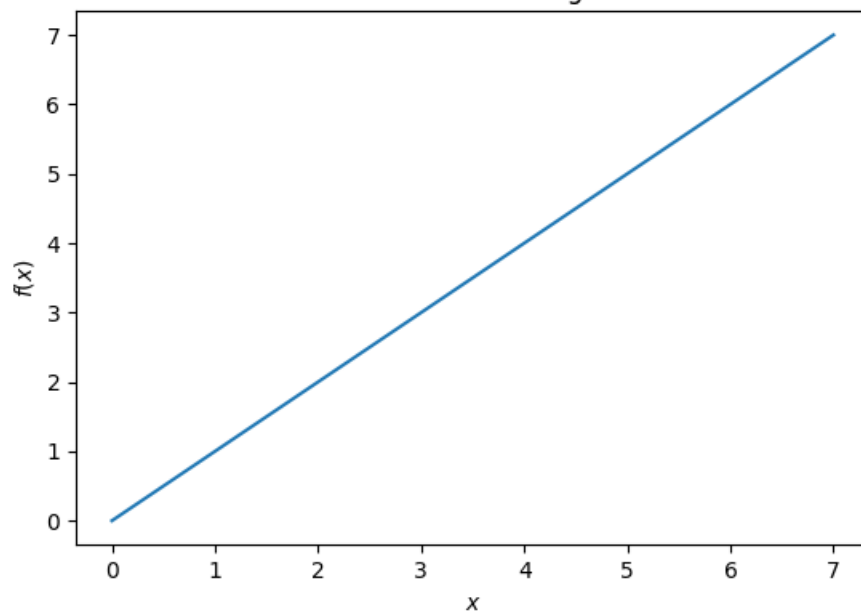
Max x

Plot

Reset



Function Plotting



fx Function Plotter

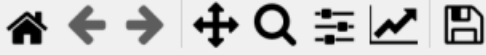
Equation

Min x

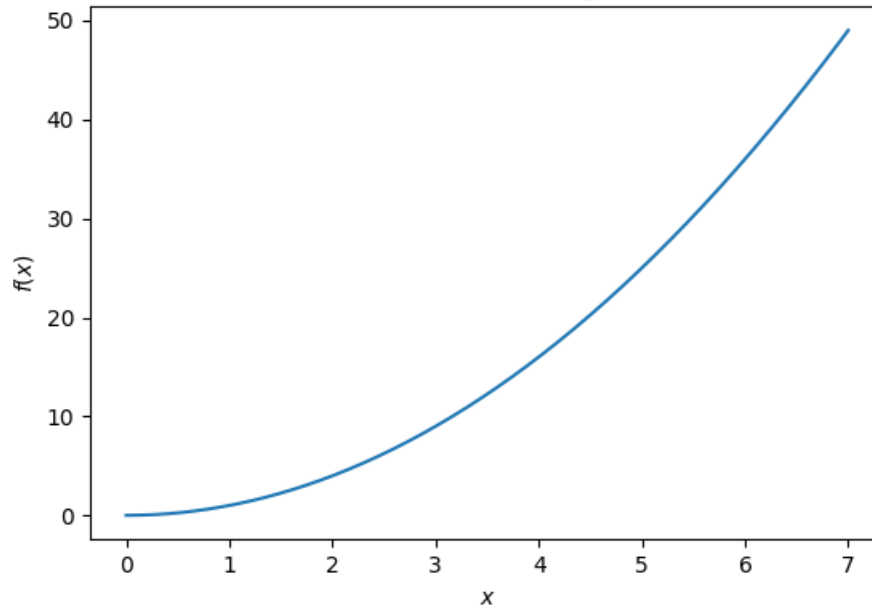
Max x

Plot

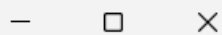
Reset



Function Plotting



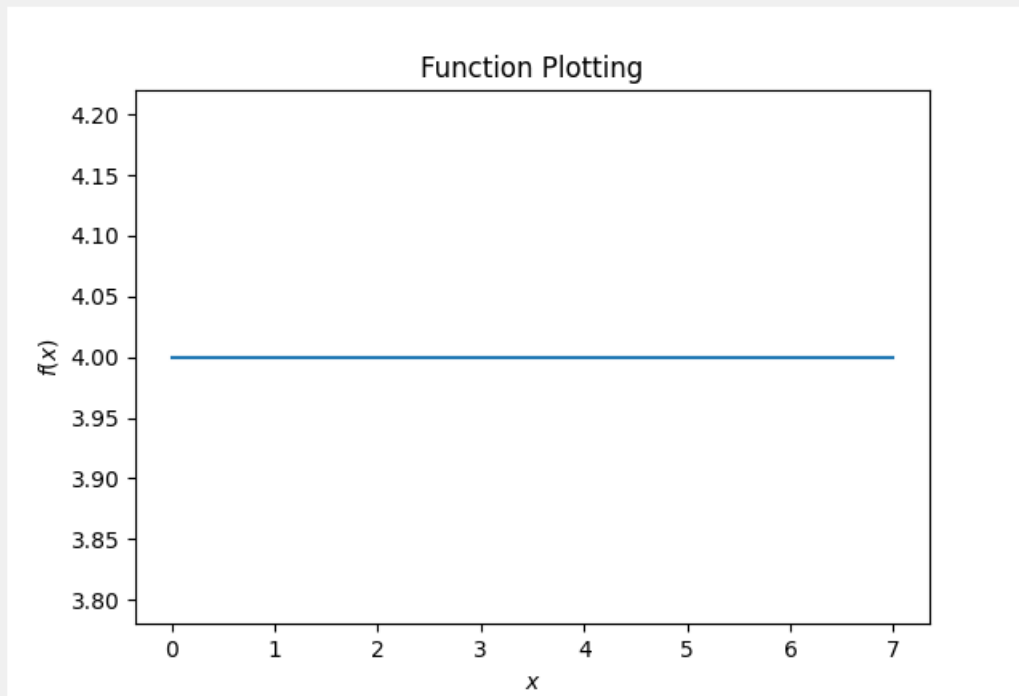
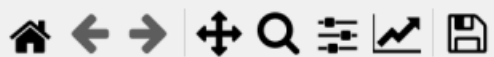
fx Function Plotter



Equation

Min x

Max x



fx Function Plotter

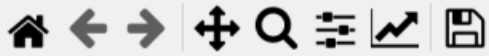
Equation

Min x

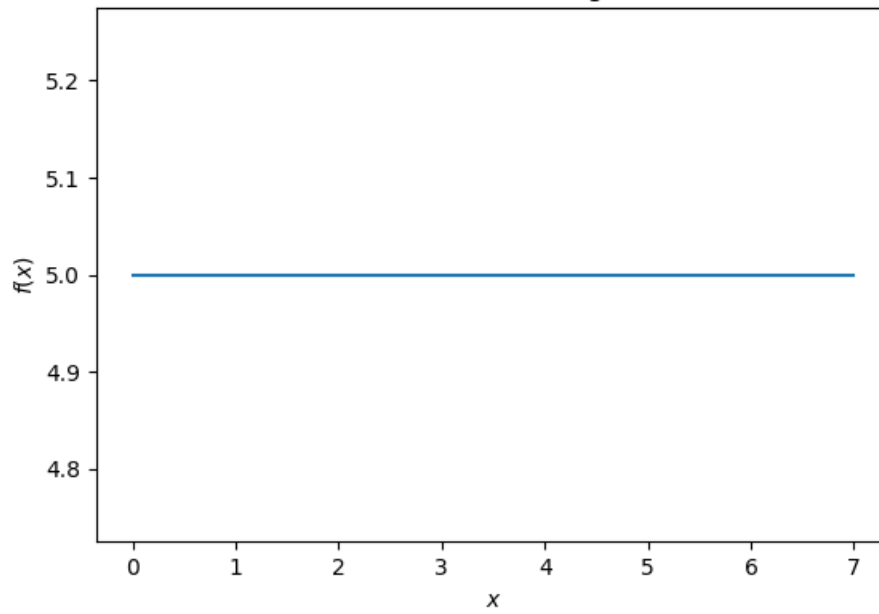
Max x

Plot

Reset



Function Plotting



fx Function Plotter

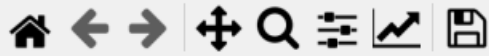
Equation $y = 2 \cdot x^2 + 1/(x+1)$

Min x 0

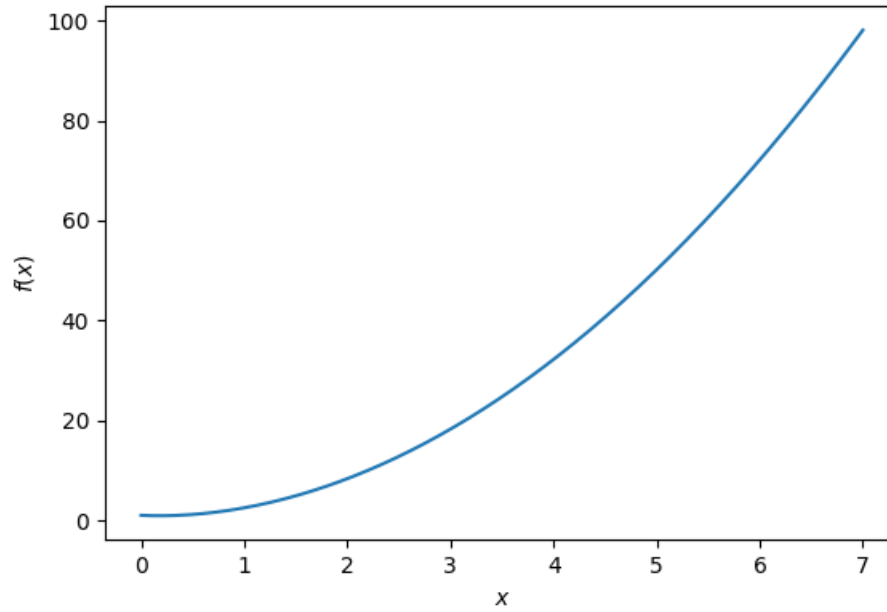
Max x 7

Plot

Reset



Function Plotting



fx Function Plotter

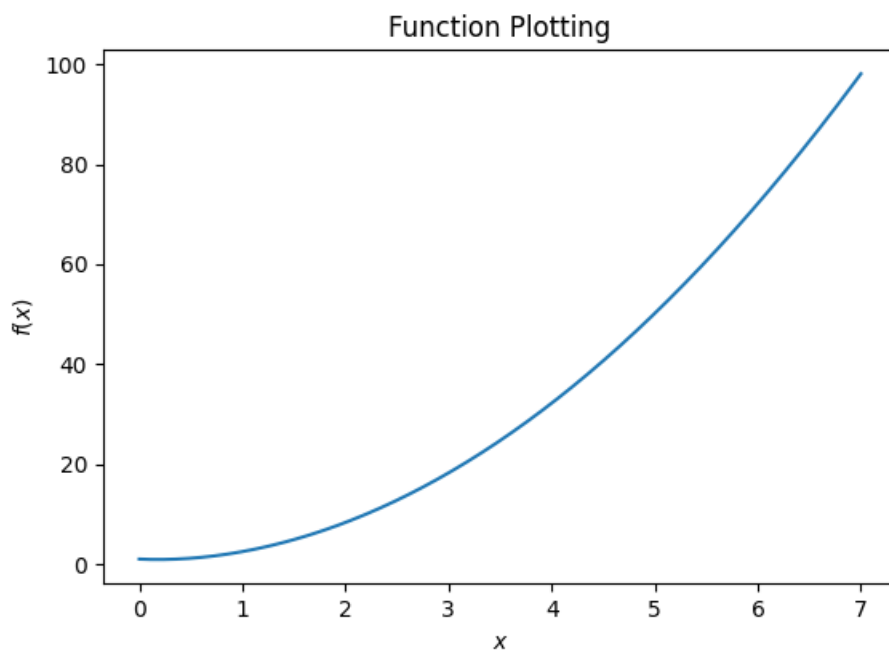
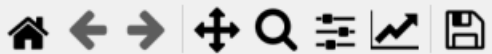
Equation

Min x

Max x

Plot

Reset



fx Function Plotter



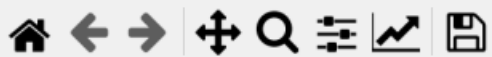
Equation $2x^2 + 1/x$

Min x 0

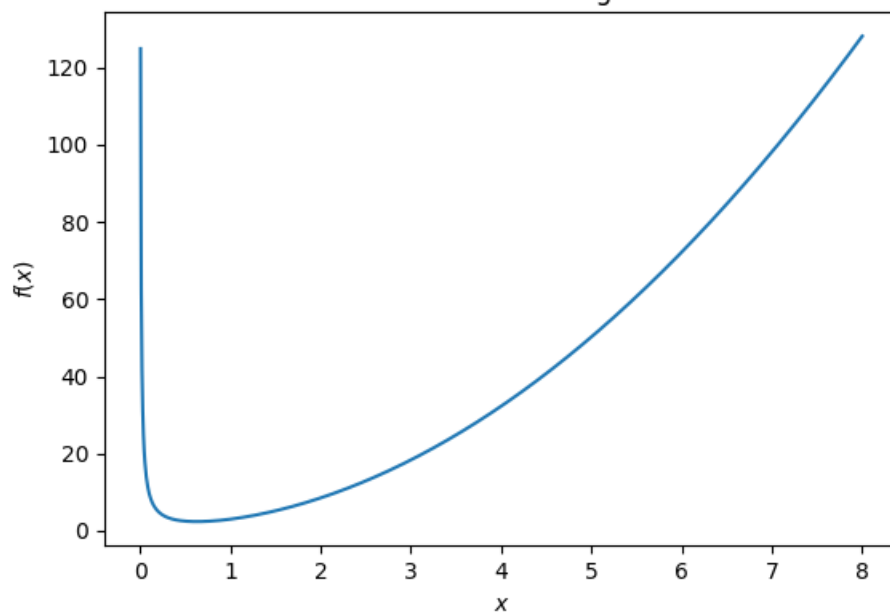
Max x 8

Plot

Reset



Function Plotting



fx Function Plotter

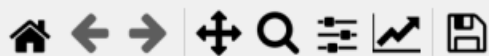
Equation

Min x

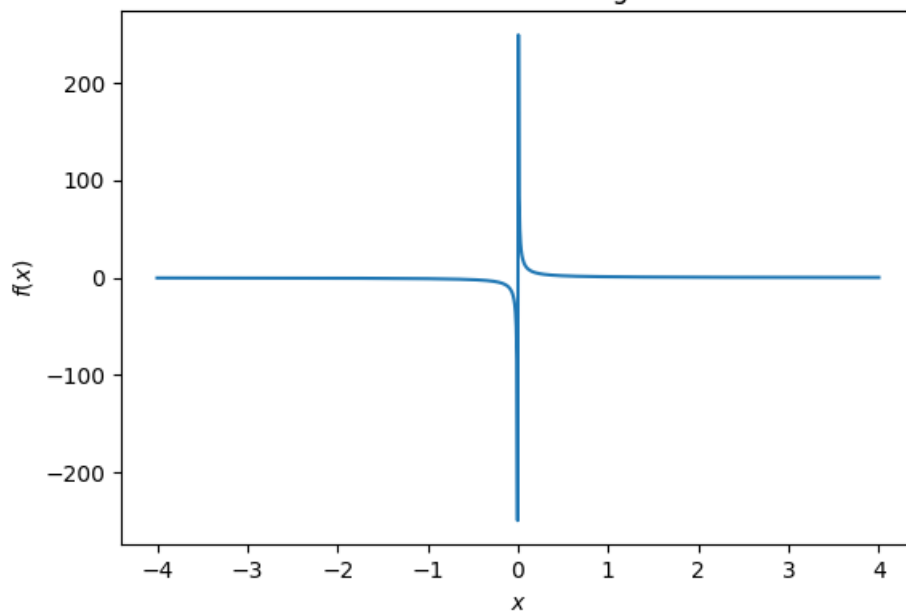
Max x

Plot

Reset



Function Plotting



fx Function Plotter

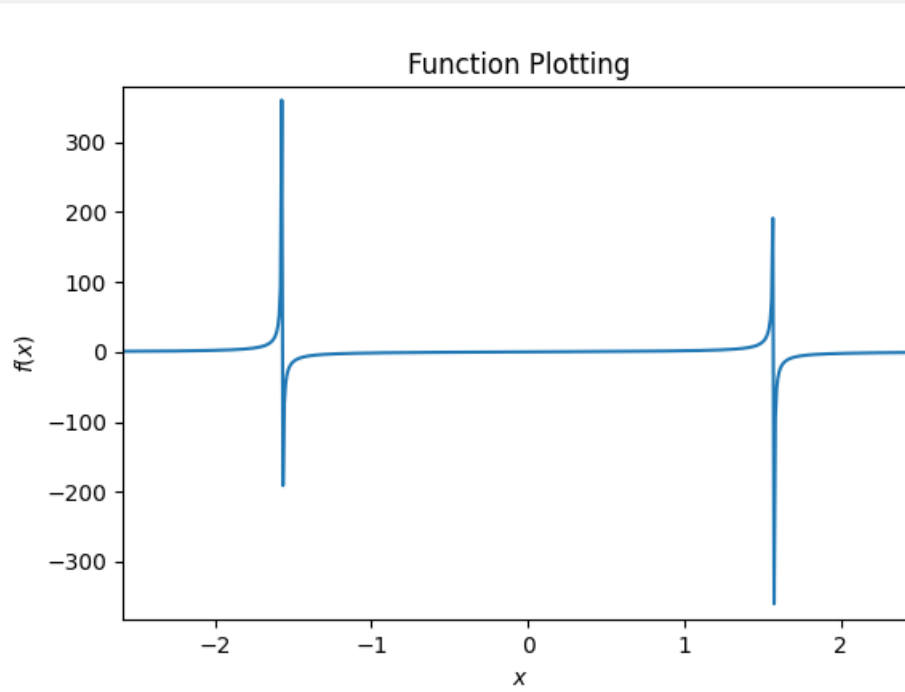
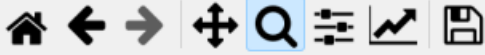
Equation

Min x

Max x

Plot

Reset



fx Function Plotter

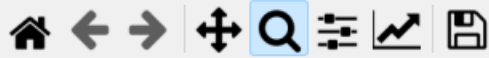
Equation $y = \sin(x) + \tan(x) + \cos(x) + e^x + 2x^2 + 7 + \sqrt{x}$

Min x 0

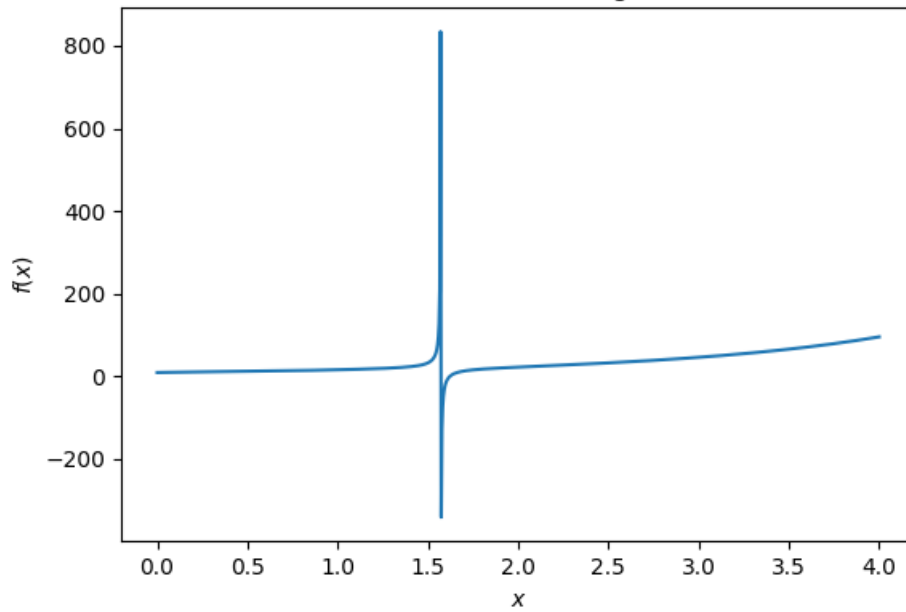
Max x 4

Plot

Reset



Function Plotting



fx Function Plotter

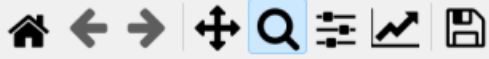
Equation $y = x^2 + 1$

Min x 0

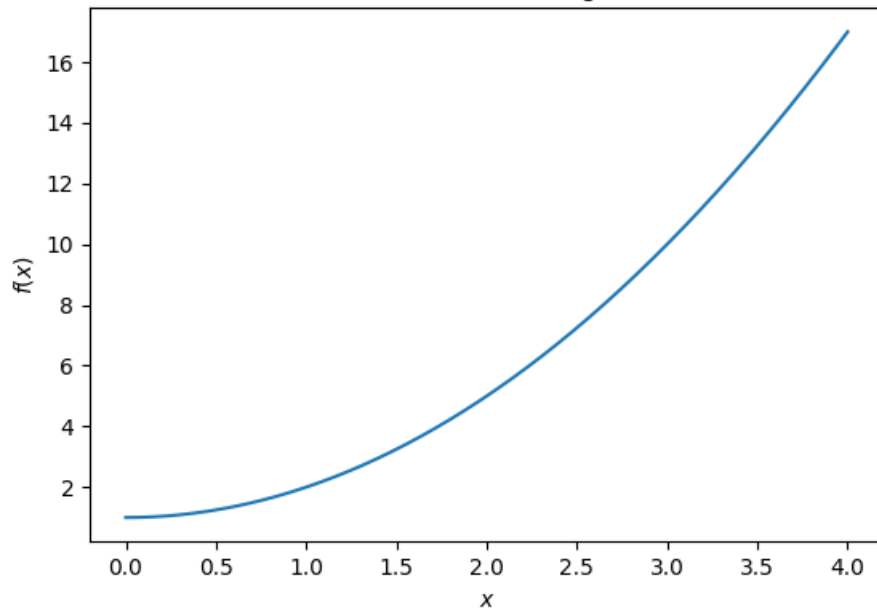
Max x 4

Plot

Reset



Function Plotting



Requirements

- App Requirements

```
pip install PySide2
pip install numpy
pip install matplotlib
```

- Testing Requirements

```
pip install pytest
pip install pytest-qt
```

Usage

- Run [Plotter.py](#) file.

```
python Plotter.py
```

- In case of testing, run [test.py](#) file.

```
pytest test_app.py
```