**AIM:** Write a program to plot membership functions

**SOURCE CODE:**

import matplotlib.pyplot as plt

import membershipFunctions as membFuncts

# Setting a domain field.

xaxis = { 'xmin':-10, 'xmax':11 }

# Creating the values for the domain of all our membership functions.

xrange = membFuncts.getAxisValues(xaxis, 0.1)

# Functions information

pendingPoints = {'a': 3, 'b':11}

linealPoints = {'a':-4, 'b':3}

trianglePoints = {'a':-3, 'b':1, 'c': 5}

trapezoidalPoints = {'a':-5, 'b': -2, 'c':6, 'd':8}

generalizedBellData = {'width':4, 'slope':2, 'center': 0}

gaussianData = {'mean':2, 'sigma':3}

# Obtaining the graph values of each membership function.

pendingFunction = membFuncts.linearFunction(pendingPoints, xrange)

linealFunction = membFuncts.linearFunction(linealPoints, xrange)

triangleFunction = membFuncts.triangleFunction(trianglePoints, xrange)

trapezoidalFunction = membFuncts.trapezoidalFunction(trapezoidalPoints, xrange)

generalizedBellFunction = membFuncts.generalizedBellFunction(generalizedBellData, xrange)

gaussianFunction = membFuncts.gaussianFunction(gaussianData, xrange)

# Setting the graphs grid size.

fig, axs = plt.subplots(2, 3, figsize=(10, 6), sharey=True)

axs[0, 0].plot(xrange, pendingFunction, 'red' )

axs[0, 1].plot(xrange, linealFunction, 'orange' )

axs[1, 0].plot(xrange, triangleFunction, 'gold' )

axs[1, 1].plot(xrange, trapezoidalFunction, 'green' )

axs[0, 2].plot(xrange, generalizedBellFunction, 'blue' )

axs[1, 2].plot(xrange, gaussianFunction, 'indigo' )

# Setting titles for each subplot.

axs[0, 0].title.set\_text('Pending')

axs[0, 1].title.set\_text('Linear')

axs[1, 0].title.set\_text('Triangle')

axs[1, 1].title.set\_text('Trapezoidal')

axs[0, 2].title.set\_text('Generalize Bell')

axs[1, 2].title.set\_text('Gauss')

# Setting the main title

plt.suptitle('Membership functions')

# Show us what you got!

plt.show()

**OUTPUT:**

