Group Activity

Your team is tasked with writing the six programs that will solve the following problems. Once you have completed (written and tested) all the problems, raise your hand and notify a peer TA.

1. Write a function using NumPy arrays and methods to get the n largest values of an array. The user should provide the array and an integer for n as input arguments.

    Expected Input:
    myFunction(([1,10,9,2,4,7,6,8]),3)

    Expected Output:
    Set difference between two arrays:
    ([8,9,10])

2. Write a Python program to plot the given values. The plot should use red triangle markers that are unfilled. The plot should include gridlines, axis labels, and a title.
    x = np.array([0, 1, 2, 3])
    y = np.array([-1, 0.2, 0.9, 2.1])

3. Write a Python function that will calculate and return the minimum distance from a line to a point. The function arguments are the slope and intercept of the line as well as a tuple of describing the point.

    Expected input:
    myFunction(slope,intercept,tuple) → myFunction(1.2,2,(-3,7))

    Expected Output:
    5.506

4. Using the above function, write a Python program that plots the line given by the slope and intercept in green, the point (tuple) as a red filled square, and the shortest distance as a blue dashed line that starts at the green line and ends at the red square.

5. Write a program to load data using the three approaches outlined in the previous class. The data is formatted as follows: month day year temp.
    Load file: TXHOUSTO.txt

    https://docs.python.org/3/library/csv.html
    https://docs.scipy.org/doc/numpy/reference/generated/numpy.loadtxt.html

6. Write a program that will load the steam.csv file and allow the user to interpolate on the liquid enthalpy values based on a section in temperature.