

Lab 4

Ch En 263 – Numerical Tools

Due: 18 Jan. 2024

Instructions

- Complete the exercise(s) below, and submit the following files to Learning Suite:
 - Handwritten portion: scan each page (or take a picture) and combine them into a single pdf named: `LastName_FirstName_Lab4.pdf`
 - Excel portion: submit a workbook named `LastName_FirstName_Lab4.xlsx` where each worksheet tab is named “Problem_1”, “Problem_2”, etc.
 - Python portion: submit a separate file for each problem named `LastName_FirstName_Lab4_ProblemXX.py` where XX is the problem number.
- Warning: the LS assignment will close promptly at 11:59 pm and late assignments will only receive 50% credit.

Lab Exercises

1. Do the following in a Python file.
 - (a) Import the math library using the `import` keyword.
 - (b) Find the cosine of $\pi/5$ radians and print it to the console.
 - (c) Write a function called `hello` that prints the string “hello world”. Call the function to print the string to the console.
 - (d) Write a function called `my_func` that takes x as an input and returns $x^2 + x \sin(x)$. Call the function for $x = 2.4$ and print the result to the console.
 - (e) Define a global variable $R = 2$ m. Write a function called `sphere` that takes no arguments and calculates the volume of a sphere with a radius R . Print the volume of the sphere (and the units) to the console.

Hint: The constant π is a pre-defined variable in the math module: `math.pi`.

2. Write a function in a Python program called `ft_to_m` that will convert the input from feet to the output in meters. For example, If I have a variable `x` in units of feet, and I want to convert it to meters and store that value in variable `y`, I would call it using:

`y = ft_to_m(x).`

Use your function to convert 5280 feet to meters, and print the result to the console.