MET 3601 Syntax Problem #11

Please do your work in the .syntax-problems folder on the JupyterHub <u>and</u> DON'T forget to also upload both the figure and the .ipynb file to Canvas!

https://fit25f.ees220002.projects.jetstream-cloud.org/

Objectives

1. Use definitions to modularize programming
2. Practice use of if statements in Python syntax
3. Obtaining input from standard inpu

Due by 11:59 pm 11/7/2025

Don't forget to screen capture the problem and put it at the top of your jupyter notebook!

Problem

1. Write a Python program that uses a definition to compute the energy emitted, according to the Stefan-Boltzmann equation from an input temperature and use the MetPy module for units.

$$E \; = \; \varepsilon\sigma T^4$$

Where ε is the emissivity (assume it is a perfect blackbody, i.e. = 1), σ is the Stefan-Boltzmann constant (5.67×10^{-8} W m^{-2} K^{-4}) and T is the temperature in Kelvin. The script should use standard input to read in the temperature in °C. Output should be the energy emitted in W m^{-2} with units expressed as part of the calculation!

A starter script syntax11.ipynb is available on the JupyerHub in the syntax problems folder.

Notes:
- Only one value should result from the input
- Double check to make sure you have the correct output and conversion for temperature.
- You must sanity check your answer with an on-line calculator (e.g., https://chemenggcalc.com/thermal-radiation-stefan-boltzmann-law-calculator/). Screen capture and put it in the notebook!
- Make sure documentation (e.g., comment block and comments throughout code) is present in your source code
- Make output informative so that anyone running your program understand what is being produced without seeing the assignment.
- DO NOT FORGET to rename the notebook

        syntax11_lastname.ipynb

where 'lastname' is your lastname 😊. Also - upload a backup copy to Canvas.