
You should hand in your script files and any requested output. Be careful about your inputs. The test runs may have input values that have been chosen because they are easy to work with, but your solutions should work properly for any valid set of inputs.

- 1) (3 pts) An important formula in math is the sum of the squares of the first n integers:

$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(2n+1)(n+1)}{6}.$$

Write a Python script that will compute both sides of this formula for some user-input value of n . Do you get the same answer for both sides?

- 2) (4 pts) Write a Python script that will take the string

```
s = 'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
```

and overwrite create the new string

```
t = 'ZYXWVUTSRQPONMLKJIHGFEDCBA'
```

There is a built-in command to do this, but you can't use that here. You need to loop over the elements in `s` and manually insert them into `t`.

- 3) (4 pts) Write a Python script that will tabulate the function

$$y(x) = \begin{cases} \cos(x) & x \leq -\pi \\ \ln(x)e^{-x^2} & -\pi < x < \pi \\ \sin(x) & x \geq \pi \end{cases}$$

on the interval $[a, b]$ for some user-input value of n . Test your script using the interval $[-2\pi, 2\pi]$ and $n = 21$.