Philip Pounds

Algebra 2

Exponential Project Calculating the Diameter of the Universe

For my exponential project, I chose to predict the size of our universe in 99999999999 years for context the universe is currently only 13.82 billion years and currently has diameter of 46.1 billion light years. To factor out the massive growth at the beginning of the universe, we will start with when it was 3 years old and only 100,000 light years in diameter very similar to our milky wave. We will solve the equation with these points (46100000000, 13,820,000,000 - 3) and (3, 100,000) Due to large the large numbers, I will use python for the calculations and write a simple python script to handle calculating the size of the universe in 99999999999 years.

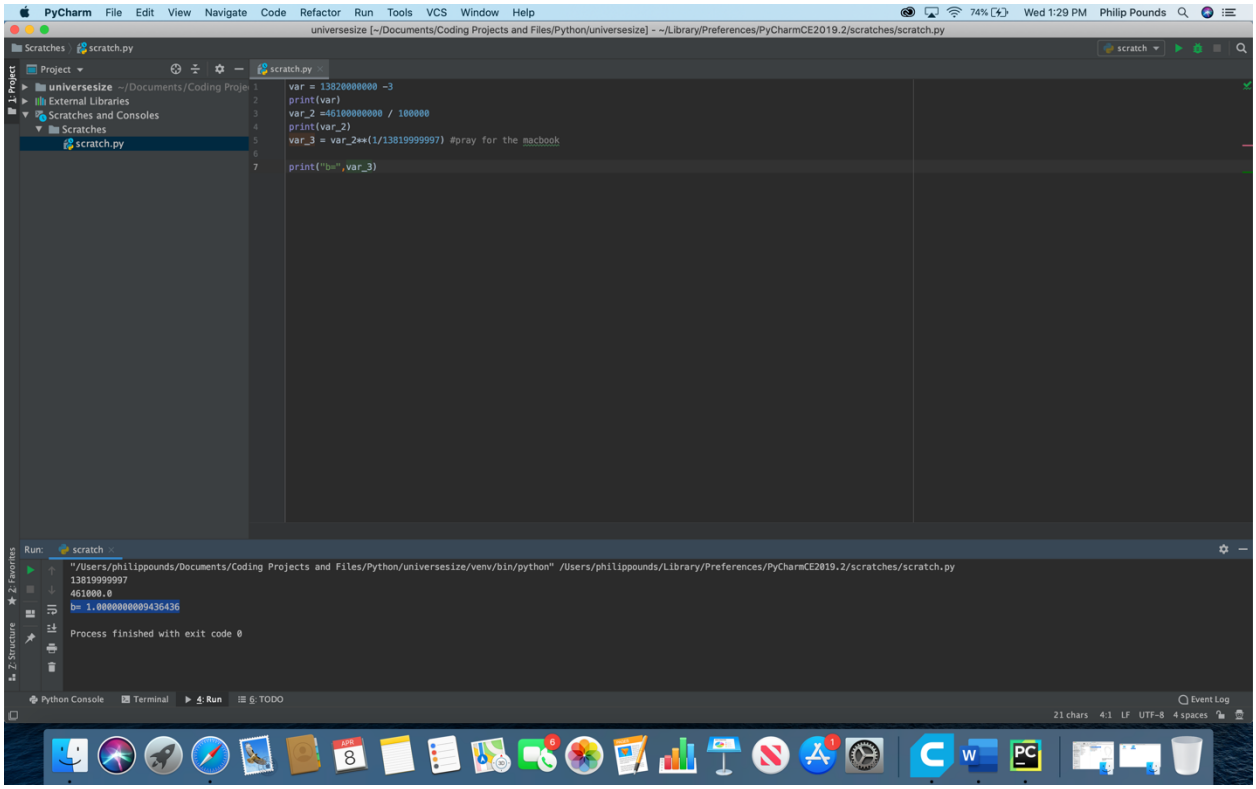
$$100{,}000 = A(B)^{0}$$

$$A = 100{,}000$$

$$46100000000 = 100{,}000(B)^{13819999997}$$

$$b = 1.0000000009436436$$

The Final Equation: $Y = 100{,}000(1.0000000009436436)^{X}$



(Above Using Pycharm a to calculate various values for the equation)

Now time to calculate the size of the universe in *light years* and *inches* in 99999999999 years.

This will require the python script below will work in any python 3 interpreter:

```
b = 1.0000000009436436
a = 100000
iyears = input("How many years")
years = float(iyears)
bx = b**years
lightyears = '%f' % (bx * a)
print("The universe will be", lightyears,"lightyears in",years,"years")
inches = '%f' % (lightyears * 31039141970409450*12) #pray for the macbook
print("The universe will be", inches,"inches in d",years,"years")
```

We can conclude the universe will be

9592264616835160919840765019453152160427016192.000000 lightyears in diameter in 99999999999.0 years and the universe in will be **3.5728279591161805e+63 inches** in diameter in 99999999999.0 years(To caculate inches, you must delete both "`'%f' %`" from the code)

(The Code and the Terminal's Output before I deleted both " '%f' % " from the code.)