

Name: Arnav Goel

Roll No: 2021519

Branch: CSAI

Resources used for Completing this Assignment:

- 1) <https://pythontutor.com/> - Used for verification and understanding almost all my errors and programs.
- 2) <https://www.thoughtco.com/perimeter-and-surface-area-formulas-604147> - Q2
- 3) <https://www.toppr.com/guides/maths/surface-areas-and-volumes/area-and-volume-of-combination-of-solids/> - Q2
- 4) <https://mathworld.wolfram.com/NarcissisticNumber.html>) - Narcissistic Number Q5
- 5) [https://en.wikipedia.org/wiki/Simpson%27s\\_rule](https://en.wikipedia.org/wiki/Simpson%27s_rule) - Q7
- 6) <https://medium.com/swlh/ray-tracing-from-scratch-in-python-41670e6a96f9> - Not related to Bonus 2 strictly but an interesting article I read while researching on 2nd Bonus which helped me visualize better.

Explanation for Bonus Questions:

Bonus 1:

The things which I did extra in it include checking for discounts to be double digit and for the phone number to be a 10 digit number by making a function for checking the number of digits.

Bonus 2:

Here I simply checked for every  $t-1$  and  $t$  for a range of  $t$ 's from 2 to 1000 and whenever they changed signs for the value when put in the sphere, that meant that they had intersected between  $t-1$  and  $t$  and I would print that out.