

Writing Assignment 2

Due Friday, September 4, 11:59 PM

Suppose that there is a sentient creature confined to a two-dimensional universe. For example, it must live inside a sheet of paper, or perhaps it is an amoeba/paramecium confined to only the surface of a petri dish. (Of course, these physical examples necessarily have thickness, but imagine that away.) They only know of directions like x and y .

One day, a being who claims of a third dimension comes. They claim there is a direction called “upward” and “downward,” or z . You are that being.

(1) First, Explain to the poor, two-dimensional soul: What is S^2 ? You may assume that the two-dimensional being knows what S^1 is, and is familiar with the xy -plane.

(2) Second: After all that, a four-dimensional being comes down to you. (Now you are the poor, three-dimensional soul.) How do they explain S^3 to you?

Spend at least 60 minutes on each part (so, two hours total) of this assignment. I want to see what you are thinking, how you conceptualize these shapes, how you are trying to improve your understanding of them, and especially whether you are being introspective about your own understanding.