DTP-Math-Circle: Session 4—Probability, Inequalities and Quantum Mechanics

Oct 14 2022

4 Random splashes of red on a blue ball

A blue ball gets splashed randomly with red color so that 10% ofits surface gets colored red. Your friend challenges you to find a position for an inscribed cube (inscribed here means that all vertices of the cube lie on the surface of the ball) such that each vertex of that cube lies in a blue patch. Should you take the challenge?

What if the random splashing of red ends up coloring 15% of the surface red?

Now, what if your friend challenges you to inscribe a regular tetrahedron with the same condition on the position of the vertices? Up to what red fraction would you be comfortable taking up the challenge?