

Maths Circle Explorations: Session 5

TIFR, Mumbai

24th December 2021

Problem 3

1. Choose $n+1$ integers from the set $\{1, 2, \dots, 2n\}$. Then there will be two which are co-prime. Prove or disprove.
2. Choose $n+1$ integers from the set $\{1, 2, \dots, 2n\}$. Then there will be two numbers such that one divides the other. Is it true ?
3. Suppose every point in \mathbb{R}^2 is colored with one of the 3 colors Red, Green and Blue. Then in at least one of the colors (depends on the coloring) for any given distance d there are two points x and y with distance d between them. Is it always true ?