

Join the Lafayette Problem Group!

Everyone is welcome! Try to get solutions, or good ideas, or even just bad ideas, for some of these problems by next week's meeting:

Thursday, September 4
Lunchtime in Pardee 216

Problem 1: What are all possible values of positive integers a , b , c , and n such that

$$n^a + n^b = n^c ?$$

Problem 2: Is it possible to color each point in the plane \mathbb{R}^2 with one of only three colors so that any two points distance 1 apart from each other have different colors?

Problem 3: In any gathering of six people, it is true that either some three people know each other or some three people are mutual strangers (or both of these things are true). Why?

Problem 4: Alice and Bob take turns flipping a coin, Alice going first. What is the probability that Alice will be the first one to get heads?

Problem 5: A ball B of radius 1 is in a corner of a room touching the floor and two walls. Find the radius of the largest ball that fits into the corner behind B .

Problem 6: *Here's a problem from a recent Putnam exam. This year's Putnam exam will be held on the first Saturday in December. Registration for the exam will occur in September.*

A *composite* (positive integer) is a product ab with a and b not necessarily distinct integers in $\{2, 3, 4, \dots\}$. Show that every composite is expressible as $xy + xz + yz + 1$, with x , y , and z positive integers.

Remember to visit www.lafayette.edu/~math!