

Problems, April 2012

Problem 1. Triangle ABC is right-angled at C . The bisector of $\angle ACB$ meets AB at L . If $BC = a$, and $AC = b$, find the distance between the orthocenters of $\triangle ALC$ and $\triangle BLC$.

Problem 2. Let n be a positive integer. We want to express n as a sum of possibly many positive integers, so that the *product* of these integers is as large as possible. How should this be done?

Problem 3. Show that $5^{2^n} - 4^{2^n}$ is a perfect square only when $n = 1$.