

HOMEWORK 4: DUE DECEMBER 7TH

MATH 437/537: PROF. DRAGOS GHIOCA

Problem 1. (6 points.) Find all positive integers n for which there exist $a, b \in \mathbb{N}$ such that

$$n^2 = 2^a + 2^b.$$

Problem 2. (7 points.) Find all integers x and y for which

$$x^3 - y^2 = 9.$$

Problem 3. (6 points.) Prove that for each positive integers x and y , if the fractional part $\{\sqrt[3]{y}\}$ equals the fractional part $\{\sqrt{x}\}$, then we must have that x is a perfect square, while y is a perfect cube.