



PUTNAM EXAM SEMINAR
FALL 2013

ASSIGNMENT 3
DUE SEPTEMBER 23

Exercise 1. Given any 13 real numbers, prove that there are two of them, say x and y , so that

$$0 < \frac{x - y}{1 + xy} < \sqrt{\frac{2 - \sqrt{3}}{2 + \sqrt{3}}}$$

Exercise 2. Given 5 points on a sphere, show that 4 of them must lie on a common closed hemisphere.