



PUTNAM EXAM SEMINAR
FALL 2012

ASSIGNMENT 1
DUE SEPTEMBER 5

Exercise 1. Define a sequence $\{a_n\}$ by $a_1 = 1$ and $a_{n+1} = \cos[\arctan(a_n)]$ for $n \geq 1$. Find a formula for a_n and determine $\lim_{n \rightarrow \infty} a_n$.

Exercise 2. Evaluate the infinite product

$$\prod_{n=2}^{\infty} \frac{n^3 + 1}{n^3 - 1}.$$