Extra Credit Problem
(Due in class on Monday 10/30.)
Math 455

Problem from this years "UT Math Contest" (Fermat II) for high school students.

You are not allowed to talk to ***anyone*** *about this problem!* (At least until it is due.)

Problem: Let $a, b, c \in \{1, 2, \ldots, 2005\}$ and

$$f(X) \stackrel{\text{def}}{=} aX^{101} + bX^{100} + c.$$

Prove that if $f(2006)$ is prime, then $f(X)$ has no integral root, i.e., there is no $n \in \mathbb{Z}$ such that

$$a\,n^{101} + b\,n^{100} + c = 0.$$