

Homework Assignment #1: Due Friday, September 8

Please read Chapter 1 of Apostol. Then please do the following exercises:

Part I. Apostol Chapter 1 (pp. 21–23): exercises 2, 10, 11, 16, 19, 20.

Part II. (a) Use mathematical induction to prove that, for any positive integer n , the product of any n integers of the form $4\ell + 1$ (where ℓ is a positive integer) is itself of the form $4\ell + 1$.

(b) Show that there are infinitely many primes of the form $4\ell + 3$ (for ℓ a positive integer). You may want to use the result of part (a) of this exercise.

Note: In completing this and any homework assignment, please adhere to the “Guidelines for written assignments” under the “ADDITIONAL IMPORTANT COURSE INFORMATION” banner on our course page – write in complete sentences, etc.