

## Math 453: Homework # 8

Due Friday, 15 March 2019 in class

In writing your proofs, fully explain all the important steps. Use full and grammatically correct English sentences. Be clear and concise.

Exercise numbers are from the end-of-section exercise sets in the **2002** reissue of *Elementary Number Theory* by James K. Strayer.

*There are hints for items 3, 4, and 5 in the section at the end of the textbook.*

1. (5 points) Exercise Set 3.5, # **55**
2. (5 points) Exercise Set 3.6, # **64**
3. (5 points) Exercise Set 3.6, # **65** (To be clear, the definition of  $\Lambda(n)$  is that  $\Lambda(n) = \ln p$  if  $n = p^a$  for some *prime* number  $p$  and *positive* integer  $a$ , and  $\Lambda(n) = 0$  for all other positive integers  $n$ . For example,  $\Lambda(1) = 0$ ,  $\Lambda(12) = 0$ ,  $\Lambda(3) = \ln 3$ , and  $\Lambda(27) = \ln 3$ .)
4. (5 points) Exercise Set 3.6, # **66** (Correction: Assume that  $f$  is not identically zero. In other words, assume that there is some integer  $d$  such that  $f(d) \neq 0$ .)
5. (5 points) Exercise Set 3.6, # **68**