



NUMBER THEORY II
FALL 2010

ASSIGNMENT 3.1
DUE SEPTEMBER 15

Exercise 1. Let f and g be arithmetic functions.

a. Define $(fg)(n) = f(n)g(n)$ for all $n \in \mathbb{N}$. Prove that if f and g are multiplicative then so is fg .

b. For $n \in \mathbb{N}$ define

$$\left(\frac{f}{g}\right)(n) = \begin{cases} \frac{f(n)}{g(n)} & \text{if } g(n) \neq 0, \\ 0 & \text{if } g(n) = 0. \end{cases}$$

Prove that f/g is multiplicative if f and g are.

Exercise 2. Chapter 2, Exercise 7

Exercise 3. Chapter 2, Exercise 17(a)