# 115 Homework 9

Due Friday December 3

**Question 1** (Rosen 7.2.8,9,10,11) Which positive integers have exactly (i) two positive divisors, (ii) three positive divisors and (iii) four positive divisors? What is the product of positive divisors for any $\in \mathbb{N}$? (Why?)

**Question 2** (Rosen 7.3.11,13) Let $n \in \mathbb{N}$ . We call $n$ abundant if $\sigma(n) > 2n$ and deficient if $\sigma(n) < 2n$. Show there are infinitely many deficient numbers as well as infinitely many odd abundant ones.

**Question 3** (Rosen 7.4.10) Let $n \in \mathbb{N}$. Show $\mu(n)\mu(n+1)\mu(n+2)\mu(n+3) = 0$.