Assignment for Thursday, 3/1 & Thursday, 3/8

(I) Exercises from the book:

(we discussed these in class. Make sure you know how to do these.)

Section 6.1 → [1, 3, 4], 6, 7, 10ac, 12a, 16, 20, 22, 23

Section 6.2 → 2, 4bc, 5, 6, 7, 8

(II) Supplementary Exercises:

(22) Observe that $1+\frac{1}{3}=\frac{4}{3}$; $1+\frac{1}{2}+\frac{1}{4}=\frac{7}{4}$; $1+\frac{1}{5}=\frac{6}{5}$; $1+\frac{1}{2}+\frac{1}{3}+\frac{1}{6}=\frac{15}{6}$; $1+\frac{1}{7}=\frac{8}{7}$; $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}=\frac{15}{8}$. Guess and prove a theorem.

(23) Prove that
If $f(n)=\prod_{d|n} g(d)$ then $g(n)=\prod_{d|n} f(d)^{\mu(\frac{n}{d})}$

(24) Prove that $\frac{\sigma(n)}{\tau(n)} \geq n^{1/2}$

(Hint: First show that $\frac{\sigma(n)}{\tau(n)} \geq \prod_{d|n} d^{1/\tau(n)}$)