Assignment for Thursday, 2/23

I. Exercises from the Book:
Section 5.2 → 18a, 19, 21.
Section 5.3 → 5, 6, 7, 10, 12, 13, 18.

II. Supplementary Exercises

a) Let \( p \equiv 1 \pmod{4} \) be a prime. Show that
\[
\left( \frac{p-1}{2} \right)!^2 \equiv -1 \pmod{p}
\]

b) If \( p > 3 \) is a prime, then
\[
1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{p-1} \equiv 0 \pmod{p}
\]
Do S.E. #19 instead.

(Hint: Both these problems use Wilson's Thm.)