PROBLEM SET 5  (due on Friday, November 15th)

Pages 154-157: 2, 3, 9, 24, 25, 48.
Pages 166-167: 4, 5, 7, 9.
Pages 176-177: 2a,c, 4, 9, 14, .

ADDITIONAL PROBLEMS:

A. Prove that \( S_n \) satisfies Property A stated in question 3 on the midterm.

B. Prove that if \( H \) and \( K \) are normal subgroups of a group \( G \), then \( H \cap K \) is also a normal subgroup of \( G \).

C. Let \( G \) be a finite group. Let \( N \) be a normal subgroup of \( G \). Let \( m \) be a positive integer. Suppose that \( G/N \) has an element of order \( m \). Prove that \( G \) also has an element of order \( m \).