Reading Questions 14

page 78: Definition 3.5

1. Let $\sigma \in S_n$. Then σ is an even permutation if $o(\sigma)$ is even.
2. The cycles $(12) \in S_4$ is a odd permutation.
3. Is the permutation $(12)(24)(12) \in S_4$ even or odd?

Section 3.2 Alternating Groups (Part 1)

Properties

P 1. Write $(123)(2345)(321)$ as a product of $2-$cycles.

P 2. Let $\sigma, \tau \in S_n$. Prove or disprove. If σ and τ are both odd then $\sigma\tau$ is even.

P 3. List the elements of A_4.

P 4. Determine if $(123)(4567) \in A_8$.

P 5. Prove that A_n can be generated by all $3-$cycles in S_n.