MA 503 Homework 9

Do the following problems in Clark:

1. 26ι. Also, find an isomorphism from V to the group $\mathbb{Z}_2 \times \mathbb{Z}_2$.

2. 26κ. ($A * B$ is defined in **8α**.)

3. 26λ.

4. 26μ. Also, find an isomorphism from this group to the one in **26λ**.

5. 27β.

7. 27γ.

8. 79β.

9. 80γ.

10. 80δ.

11. A group G is said to be *generated* by a subset $S \subset G$ if every element $g \in G$ can be written in the form

$$g = s_1^{a_1} s_2^{a_2} \dots s_n^{a_n} \qquad (s_i \in S;\ a_i \in \mathbb{Z}).$$

(By convention, the empty product is considered to be the identity element.)

Answer the following two questions:

"G generated by S" means that G is the smallest subgroup of G containing S. (Why?)

If G is finite, the integers a_i can all be taken to be positive. (Why?)