7. Let G be the group $U_2 \times U_4$. (a) LIST the elements of the set

$$S = \{g \in G \mid g * g = \text{id}\}.$$

(b) Is S a subgroup of G? Justify your answer to (b).

(a) $S = \{(1,1),(1,-1),(-1,1),(-1,-1)\}$

(b) Yes. Problem 5 applies.

8. Give an example of a non-cyclic abelian group of order 16. I do not need to see many details.

$U_4 \times U_4$ is abelian, has order 16, and every element has order 4 or less