Math 476 - Abstract Algebra 1 Exam 1 – Makeup (**Due:** Friday, Oct. 27th by 4:00pm)

Name:.

1. (4 points) Consider  $G = \mathbb{Z}_n \oplus \mathbb{Z}_m$ . What must be true about m and n in order for G to be a cyclic group? Prove your answer.

2. (2 points) Find an example of a specific group G and subgroups H and K such that |H| = 24, |K| = 18 but with  $H \not\subseteq K$  and  $K \not\subseteq H$ . Then find  $H \cap K$ .