Math 356 Assignment 9: Due Wednesday, March 24
Do the following problems from Part IV of the text
§18: 22,38,41,43,44,45,49
§19: 2,23,26,28,30
§24: 4,10,19
Consider the ring

$$\mathbb{G} = \{a_1 + a_2 i + a_3 j + a_4 k : a_1, a_2, a_3, a_4 \in \mathbb{Z}_5\}$$

with addition and multiplication defined as for the Quaternions, i.e., by the formulas on pp. 225 of the text. Show that $\mathbb{G}$ is *not* a division ring, by finding a nonzero element which is not a unit. (See Theorem 24.10 of the text for a general result along these lines.)