AMAT 327(Z): Elementary Abstract Algebra, Spring 2012 Quiz # 17, April 5

Name: .....

Let $G = \mathbb{R} - \{0\}$ be the set of all non-zero real numbers. For all $a, b \in G$ define $a * b = \frac{ab}{2}$.
Is it true or false that G with respect to this operation $*$ is a group? And if G is a group, is it abelian?
State explicitly which axioms hold and which ones (if any) fail.