Group Examples

Q1 Show that $(Z, *)$ is an infinite abelian group, where $'*'$ is defined as $a * b = a + b + 2$ and Z is the set of all integers

Q2 Let G be the set of all rational numbers except 1 and $*$ be defined on G by $a * b = a + b - ab$ for all $a, b \in G$. Show that $(G, *)$ is an infinite Abelian group.

Q3 An equation $*$ on Z^+ (the set of all non-negative integers) is defined as $a * b = a - b, \forall a, b \in Z^+$. Is $*$ a binary operation on Z^+ ?

Q4 The set of integers Z with the binary operation $*$ defined as $a * b = a + b + 1$ for a, b, Z is a group. The identity element of this group is