Assignment 6

MA08 Applied Algebra Deadline 05:00 PM, Wednesday, 20190710

1. Determine whether the given map f is a homomorphism.
   (a) Let $f : \mathbb{Z} \to \mathbb{R}$ by given by $f(x) = x$ for $x \in \mathbb{Z}$, where both $\mathbb{Z}$ and $\mathbb{R}$ are additive.
   (b) Let $f : \mathbb{R}^* \to \mathbb{R}^*$ by given by $f(x) = |x|$ for $x \in \mathbb{R}^*$, where $\mathbb{R}^*$ is multiplicative. (Here $\mathbb{R}^*$ denotes the set with nonzero elements of $\mathbb{R}$, i.e. $\mathbb{R}\backslash\{0\}$.)
   (c) Let $f : \mathbb{R} \to \mathbb{R}^*$ by given by $f(x) = 2^x$ for $x \in \mathbb{Z}$, where $\mathbb{R}$ is additive and $\mathbb{R}^*$ is multiplicative.
2. (a) Let G be a group and let $g \in G$. Let $f_g : G \to G$ be defined by $f_g(x) = gx$ for $x \in G$. G is multiplicative. For which $g \in G$ we can say that f_g is a homomorphism?
   (b) Let G be a group and let $g \in G$. Let $f_g : G \to G$ be defined by $f_g(x) = gxg^{-1}$ for $x \in G$. G is multiplicative. For which $g \in G$ we can say that f_g is a homomorphism?

   Notice: Please write Your Name and Student ID when you submit.