

QUIZ 1

Instructions: Please write your name at the top of the page. Show all your work and explain your reasoning unless otherwise indicated.

Consider the function:

$$\phi: \mathbb{Z} \longrightarrow \mathbb{Z}/12\mathbb{Z} \quad \text{given by} \quad n \longmapsto \overline{8n}.$$

(a) (5 points). Prove that ϕ is a homomorphism of $\mathbb{Z}$ -modules.

(b) (5 points) Compute the kernel and image of ϕ .