Worksheet 16

1. Show that the function $\pi : \mathbb{Z} \to \mathbb{Z}/3\mathbb{Z}$ given by $\pi(x) = [x]$ is a homomorphism.
2. Show that the function $\varphi : \mathbb{Z}/3\mathbb{Z} \to D_6$ given by $\varphi([a]) = \sigma^a$ is a well-defined homomorphism.
3. Show that the function $\varphi : U(11) \to U(11)$ given by $\varphi(x) = x^2$ is a homomorphism.
4. Show that the function $\varphi : D_6 \to D_6$ given by $\varphi(x) = x^2$ is *not* a homomorphism.