Tensor Products II

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Lecture Notes

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July 20, 2023

Theorem 4.6

Example 4.7

Example 4.8

A $\mathbb{Z}/p^2\mathbb{Z}$ -module homomorphism $\phi : \mathbb{Z}/p\mathbb{Z} \to \mathbb{Z}/p^2\mathbb{Z}$ is determined by its value on $1 = 1 + p\mathbb{Z}$. Can it be a number $0 < k < p$? Then $\phi(k + p - k) = \phi(k) + \phi(p - k) = k + p - k = p = p + p^2\mathbb{Z}$, but in $\mathbb{Z}/p\mathbb{Z}$, the argument is $p = 0$ $(p + 3\mathbb{Z} = 0 + \mathbb{Z})$, then $\phi(0) = 0$ $(0 + p^2\mathbb{Z})$, a contradiction.