Problem Set 8

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1.1 Part a

Define a map

$$\mathrm{ev} : \hom_R(\mathbb{Z}_m, A) \to A$$
$$(f : \mathbb{Z}_m \to A) \mapsto f(1)$$

Then noting that ev is a homomorphism, forcing $f(\overline{0}) = 0_A$ (where $\overline{0} : \mathbb{Z}_m \to A$ is the zero map), we must have

$$0 = f(0) = f(m) = mf(1),$$

we must have $mf(1) = 0$ in A, i.e. $