Exercise 19.10

Abstract Algebra 1
MATH 3140

SEBASTIAN CASALAINA

ABSTRACT. This is Exercise 19.10 from Fraleigh [Fra03, §19]:

Exercise 19.10. Find the characteristic of the ring $\mathbb{Z}_6 \times \mathbb{Z}_{15}$.

Solution. Since the ring $\mathbb{Z}_6 \times \mathbb{Z}_{15}$ has unity $(1, 1)$, then using [Fra03, Theorem 19.15], we may find the characteristic of the ring by finding the smallest positive integer n such that $n \cdot (1, 1) = 0$. From what we know about cyclic groups, $n = \mathrm{lcm}(6, 15) = 30$. Thus the characteristic of the ring $\mathbb{Z}_6 \times \mathbb{Z}_{15}$ is 30. $\qquad \square$

REFERENCES

[Fra03] John Fraleigh, *A First Course in Abstract Algebra*, Seventh edition, Addison Wesley, Pearson, 2003.

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