

HOMEWORK 1
ABSTRACT ALGEBRA 1
MATH 3140

SEBASTIAN CASALAINA

ABSTRACT. This is Homework 1. The problems are from Fraleigh [[Fra03](#), §0]:

- HW1a Fraleigh Exercises 0: 2, 4, 10, 12, 14, 17.
- HW1b Fraleigh Exercises 0: 18, 19, 28, 30, 31, 36.

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SECTION 0

Exercise 0.2. Describe the set $\{m \in \mathbb{Z} \mid m^2 = 3\}$ by listing its elements.

Solution. Since there is no integer whose square is equal to 3, we have that

$$\{m \in \mathbb{Z} \mid m^2 = 3\} = \{ \};$$

i.e., the empty set \emptyset .

Exercise 0.4. Describe the set $\{m \in \mathbb{Z} \mid m^2 - m < 115\}$ by listing its elements.

Solution.

Exercise 0.10.

Solution.

Exercise 0.12.

Solution.

Exercise 0.14.

Solution.

Exercise 0.17.

Solution.

Exercise 0.18.

Solution.

Exercise 0.19.

Solution.

Exercise 0.28.

Solution.

Exercise 0.30.

Solution.

Exercise 0.31.

Solution.

□

Exercise 0.36.

Solution.

□

REFERENCES

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

UNIVERSITY OF COLORADO, DEPARTMENT OF MATHEMATICS, CAMPUS BOX 395, BOULDER, CO 80309

Email address: casa@math.colorado.edu