

HOMEWORK 1
FRIDAY AUGUST 26

TEMPLATE
MATH 3140

SEBASTIAN CASALAINA

ABSTRACT. This is the first homework assignment. The problems are:

- Fraleigh [Fra03] Exercises 0: 2, 4, 10, 12, 14, 18, 28, 30, 36.
- Exercises TBA from the .pdf.
- Fraleigh [Fra03] Exercises A (Appendix): 2-14 even.

EXERCISES 0

Exercises 0: Problem 2. Describe the set $\{m \in \mathbb{Z} \mid m^2 = 3\}$ by listing its elements.¹

←1

Solution to Exercises 0: Problem 2.

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

In other words, the set is the empty set.

Date: August 21, 2016.

I would like to take this opportunity to thank my class for their support.

¹I worked on this problem with the entire class. You are encouraged to work together on homework assignments. However, for each problem you must write your own solution, you must indicate with whom you worked, and you must cite any resources you used in solving the problem.

EXERCISES FROM THE .PDF

Problem TBA.

Solution TBA.

EXERCISES A

Exercises A: Problem 2. Compute the arithmetic expression

$$\begin{bmatrix} 1+i & -2 & 3-i \\ 4 & i & 2-i \end{bmatrix} + \begin{bmatrix} 3 & i-1 & -2+i \\ 3-i & 1+i & 0 \end{bmatrix},$$

if it is defined.

Solution to Exercises A: Problem 2.

$$\begin{aligned} & \begin{bmatrix} 1+i & -2 & 3-i \\ 4 & i & 2-i \end{bmatrix} + \begin{bmatrix} 3 & i-1 & -2+i \\ 3-i & 1+i & 0 \end{bmatrix} \\ &= \begin{bmatrix} 4+i & i-3 & 1 \\ 7-i & 1+2i & 2-i \end{bmatrix}. \end{aligned}$$

SOME EXAMPLES THAT MIGHT BE USEFUL

Theorem A. *The theorem*

1. THE FIRST SECTION

[AM69]

$$(1.1) \quad \begin{array}{ccc} X & \xrightarrow{f} & Y \\ \pi \downarrow & \nearrow & \\ Z & & \end{array}$$

$$\begin{array}{ccc} \mathcal{A} & \xrightarrow{f} & B \\ \parallel & & \\ C & \longrightarrow & D \end{array}$$

This is the full version

REFERENCES

- [AM69] M. F. Atiyah and I. G. Macdonald, *Introduction to commutative algebra*, Addison-Wesley Publishing Co., Reading, Mass.-London-Don Mills, Ont., 1969. MR 0242802 (39 #4129)
- [Fra03] John B. Fraleigh, *A first course in abstract algebra*, 7 ed., Addison-Wesley Publishing Co., Reading, Mass.-London-Don Mills, Ont., 2003.

UNIVERSITY OF COLORADO, DEPARTMENT OF MATHEMATICS, CAMPUS BOX
395, BOULDER, CO 80309-0395

E-mail address: casa@math.colorado.edu