

Mathematics 2200H – Mathematical Reasoning

TRENT UNIVERSITY, Fall 2019

Assignment #2

Knights and Knaves

Due on Friday, 20 September.

The following is Puzzle #313 out of 382 of the knights and knaves puzzle collection at:

<https://philosophy.hku.hk/think/logic/knights.php>

A very special island is inhabited only by knights and knaves. Knights always tell the truth, and knaves always lie.

You meet eight inhabitants: Marge, Mel, Betty, Bob, Bill, Carl, Zeke and Alice. Marge says that it's not the case that Bob is a knave. Mel claims, "Bill is a knave." Betty tells you that Carl and Zeke are knights. Bob claims that neither Mel nor Bill are knaves. Bill says, "Only a knave would say that Carl is a knave." Carl tells you, "I know that Alice is a knave and that Zeke is a knight." Zeke tells you, "Of Carl and I, exactly one is a knight." Alice claims that Zeke and Marge are both knights.

Can you determine who is a knight and who is a knave?

1. Determine, as best you can, which of the eight are knights and which are knaves. Please explain your reasoning as fully as you can. [10]