

Homework. Propositional logic formulas in text tasks

To solve the following task with help of Propositional logic formulas.

«Who Stole the Tarts?»

THE FIRST TALE

"How about making us some nice tarts?" the King of Hearts asked the Queen of Hearts one cool summer day.

"What's the sense of making tarts without jam?" said the Queen furiously. "The jam is the best part!"

"Then use jam," said the King.

"I can't!" shouted the Queen. "My jam has been stolen!"

"Really!" said the King. "This is quite serious! Who stole it?"

"How do you expect *me* to know who stole it? If I knew, I would have had it back long ago and the miscreant's head in the bargain!"

Well, the King had his soldiers scout around for the missing jam, and it was found in the house of the March Hare, the Mad Hatter, and the Dormouse. All three were promptly arrested and tried.

"Now, now!" exclaimed the King at the trial. "I want to get to the bottom of this! I don't like people coming into my kitchen and stealing my jam!"

"Why not?" asked one of the guinea pigs.

"Suppress that guinea pig!" shouted the Queen. The guinea pig was promptly suppressed. (Those who have read *Alice's Adventures in Wonderland* will recall the meaning of the word *suppress*: The officers of the court put the guinea pig into a canvas bag, which tied up at the mouth with strings, and sat upon it.)

"Now then," said the King, after the commotion of suppressing the guinea pig had died down, "I want to get to the bottom of this!"

"You've already said that," remarked a second guinea pig. (This guinea pig was also promptly suppressed.)

"Did *you* by any chance steal the jam?" the King asked the March Hare.

"I never stole the jam!" pleaded the March Hare. (At this point all the remaining guinea pigs cheered, and were all promptly suppressed.)

"What about *you*?" the King roared to the Hatter, who was trembling like a leaf. "Are you by any chance the culprit?"

The Hatter was unable to utter a word; he just stood there gasping and sipping his tea.

"If he has nothing to say, that only proves his guilt," said the Queen, "so off with his head immediately!"

"No, no!" pleaded the Hatter. "One of us stole it, but it wasn't me!"

"Make a note of that!" said the King to the jury. "This evidence might turn out to be quite important!"

"And what about *you*?" continued the King to the Dormouse.

"What do you have to say about all this? Did the March Hare and the Hatter both tell the truth?"

"At least one of them did," replied the Dormouse, who then fell asleep for the rest of the trial.

As subsequent investigation revealed, the March Hare and the Dormouse were not both speaking the truth. Who stole the jam?»

Smullyan, Raymond M. *Alice in puzzle-land*. New York: Morrow. 1982.

1. Puzzles. [1. Puzzles] I. Carroll. Lewis, 1832-1898.

Alice's adventures in Wonderland. II. Title.