

Homework 1

Due Friday, September 4

SEA: Ch 1.1 # 5,7,8d,12
Ch 1.2 # 8b c f i, 9, 10, 11

Problem A:

Groucho Marx said: “One morning I shot an elephant in my pajamas. How he got into my pajamas I'll never know.”
Why is this funny?

Problem B:

The p-q system is a formal system with alphabet **p**, **q**, and - (hyphen).

The system has infinitely many axioms, but all of the same form:

$x\mathbf{p-q}x-$ is an axiom, whenever x is composed of hyphens only.

(note that x must stand for the same string of hyphens in both places).

For example, when x is --, then $--\mathbf{p-q}---$ is an axiom.

There is one rule:

Suppose x , y , and z consist only of hyphens. From $x\mathbf{p}y\mathbf{q}z$, produce $x\mathbf{p}y-\mathbf{q}z-$

For example, from $--\mathbf{p}--\mathbf{q}--$, produce $--\mathbf{p}---\mathbf{q}---$

Determine which strings can be produced in this system, by finding an interpretation for the symbols which make it easy to tell if a string can be produced.