

# 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:

**xp-qx-** 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 **--p-q--** is an axiom.

There is one rule:

Suppose  $x$ ,  $y$ , and  $z$  consist only of hyphens. From **xpyqz**, produce **xpy-qz-**  
For example, from **--p--q--**, produce **--p---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.