Row Equivalence and Inconsistency

If a system is inconsistent, it is row equivalent to a system with a row of the form

$$0 \; 0 \; \ldots \; 0 \; k$$

for $k \neq 0$

(what happens if $k = 0$?)

Summary

Linear equations define hyperplanes

Systems of linear equations may or may not have solutions

Linear systems can be represented as matrices, which makes them more convenient to solve