***Definitions***

**Polyhedron**

A polyhedral set, or polyhedron, is an intersection of a finite number of hyperplanes and halfspaces.

For all we have

so P is convex.

**Convex set**

For all

Feasible

**Extreme point**

For any polyhedron *P*, a point is called an extreme point if there does not exist , where such that .

**Basic solution**

Consider a polyhedron *P* in , and let ,

1. The point is a basic if
   1. it satisfies all equality constraints
   2. at least *n* of the constraints of *P* are active and linearly independent
2. If , we say that is a **basic feasible solution**.

**Basic feasible solution**

**Active constraint**

For any equality/inequality of form

where if satisfiesthen we say that the corresponding constraint is active at .

*Example*

The inequality is active at (0,1),(1,0),(1/2,1/2), etc.

***Algorithms***

Convert LP to standard form

1. Convert max to min
   1. max cTx = -(min cTx) = -min - cTx, and the min (-) can be disregarded, min - cTx.

Determine extreme points