

Polygon of Constraints pg 44 Act #1 B.B.

To raise funds for learning disabilities, members organize a concert in a theater. They want to allocate seats for donors and the rest of the seats are reserved for general admission. The theater contains a maximum of 500 seats. In order to satisfy the fundraising campaign requirements, there must be at most three times as many seats for general admission than seats reserved for donors. Organizers wish to have at least 50 seats reserved for donors and a maximum of 300 seats for general admission.

a) Identify the variables in this situation.

x: number of seats reserved for donors

y: number of seats reserved for gen. admission

b) What two inequalities are needed to indicate that the situation will be in the first quadrant?

$x \geq 0 ; y \geq 0$

c) Translate each of the constraints of this situation into an inequality.

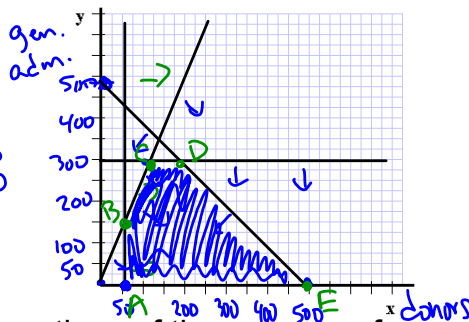
$x + y \leq 500$

$y \leq 3x$

$x \geq 50$

$y \leq 300$

x	y
0	0
50	150
100	300



d) Graph

e) Determine the vertices of the polygon of constraints

A(50,0) B(50,150) C(100,300)  
 D(200,300) E(500,0)

The above polygon of constraints is called a bounded polygon of constraints.

A polygon of constraints can also be unbounded (see example below)

