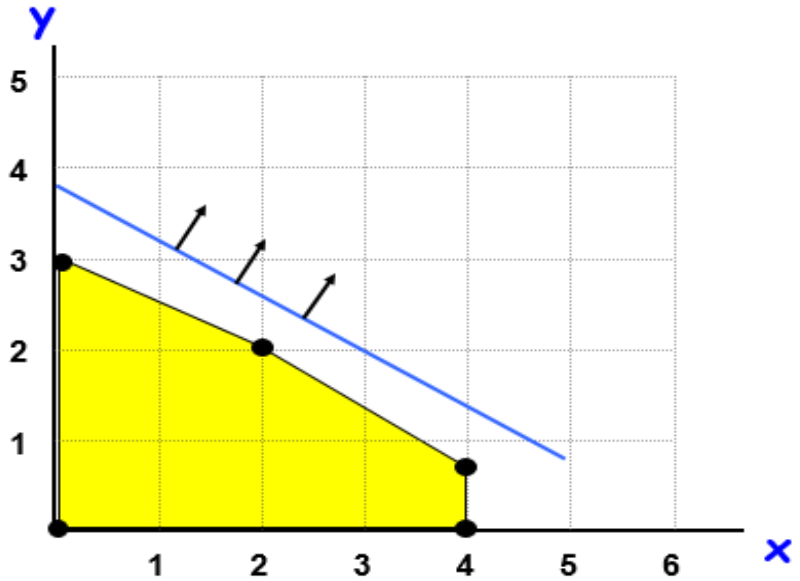
Simplex Method

(1/1 point)

Below is a diagram demonstrating the Simplex Method



Start at the point $(0, 3)$. According to the simplex method, what will the next extreme point be?

- $(0, 3)$

- (selected) $(2, 2)$ ✔
- $(0, 0)$
- $(0, 0)$ or $(2, 2)$
- There is not enough information to decide.

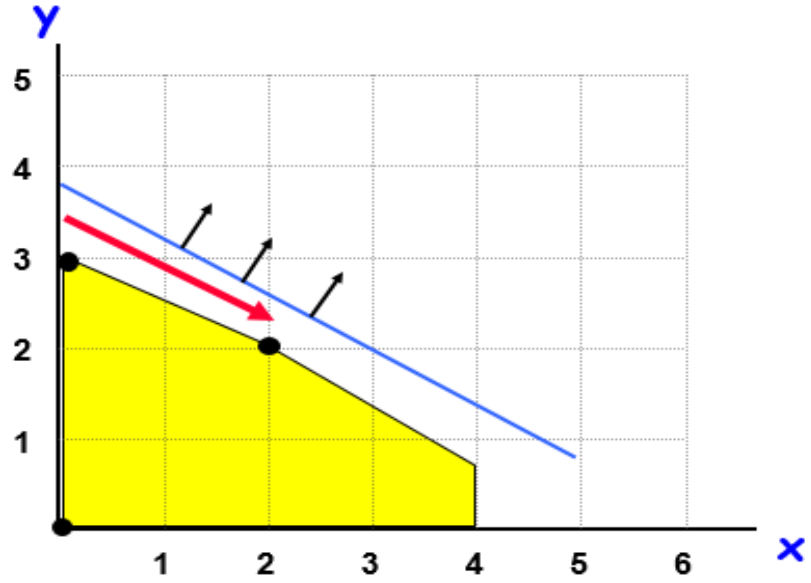
EXPLANATION

Solution

The correct answer is:

$(2, 2)$

The Simplex Method for a maximization problem moves from extreme point to extreme point while increasing the objective value. There are two extreme points adjacent to (0, 3). The points are (0, 0) and (2, 2). Of these two points, only (2, 2) has a better objective value.

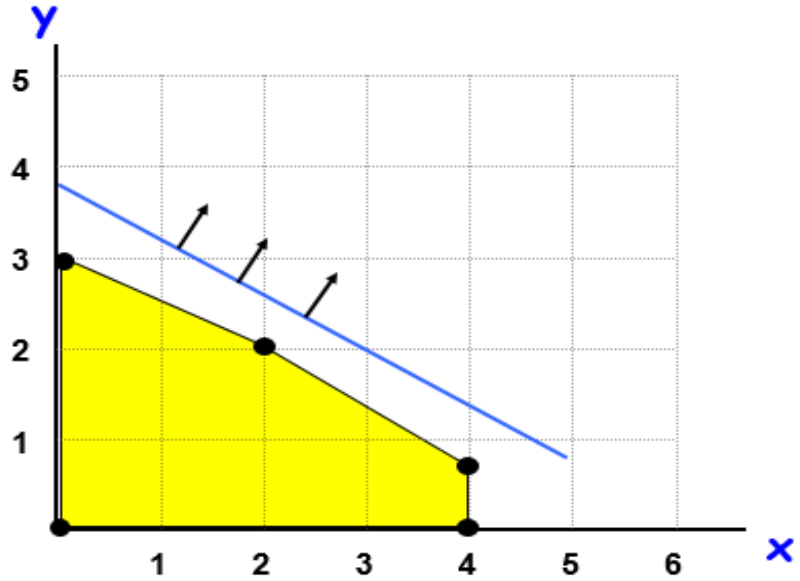


You have used 1 of 2 submissions

Simplex Step

(1/1 point)

Below is a diagram demonstrating the Simplex Method



Suppose the objective function was $6y + 3x$. What are the two different paths that the simplex algorithm might take starting at $(0, 0)$?

Choose all that apply

- [x] $(0,0) \rightarrow (0,3)$ ✔
- [x] $(0,0) \rightarrow (4,0) \rightarrow (4,0.75) \rightarrow (2,2)$ ✔
- [ ] $(0,0) \rightarrow (0,3) \rightarrow (2,2)$
- [ ] $(0,0) \rightarrow (4,0) \rightarrow (4,0.75) \rightarrow (2,2) \rightarrow (0,3)$
- [ ] None of the choices

✔

EXPLANATION

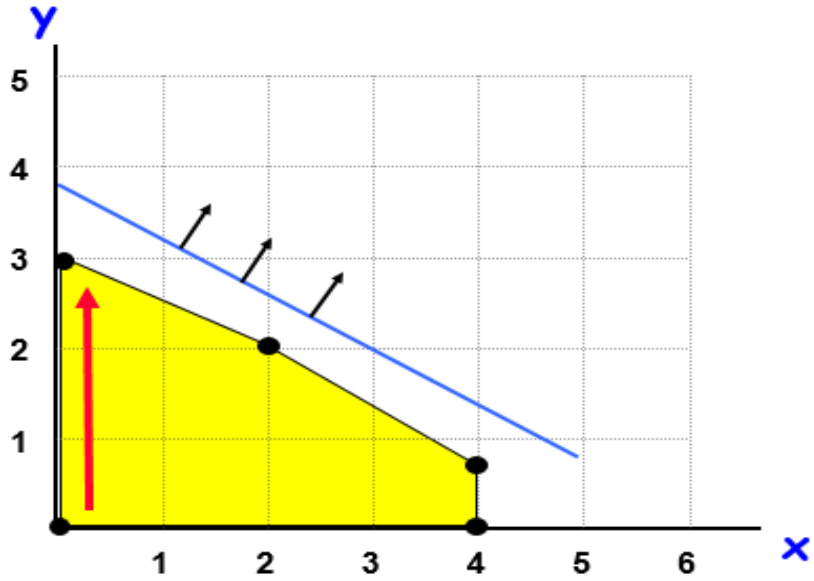
Solution

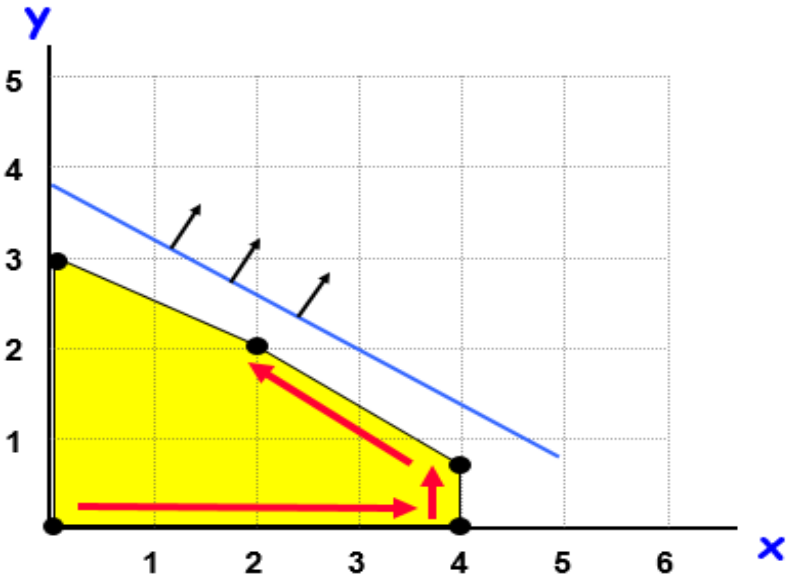
The correct answer is:

- $(0,0) \rightarrow (0,3)$
- $(0,0) \rightarrow (4,0) \rightarrow (4,0.75) \rightarrow (2,2)$

The Simplex Method looks to move between extrema (corner points) while increasing the value of a maximum objective.

Note that the simplex algorithm terminates at $(0,3)$ if it starts by going up, and terminates at $(2,2)$ if it goes right





You have used 1 of 3 submissions

Simplex Termination

(1/1 point)

Suppose that there is no improving direction but there is a direction in which the objective does not change.

Is the current corner point optimal?

- (●) Yes ✔
- ( ) No
- ( ) Cannot be determined

EXPLANATION

Solution

The correct answer is:

Yes. The simplex algorithm terminates if this occurs and simplex is guaranteed to terminate at an optimum solution if the problem is feasible.

You have used 1 of 3 submissions

Simplex Termination

(1/1 point)

Is there more than one optimal solution?

- (●) Yes ✔
- ( ) No
- ( ) Cannot be determined

EXPLANATION

Solution

The correct answer is:

Yes.

You have used 1 of 3 submissions