Zadanie4Lab4

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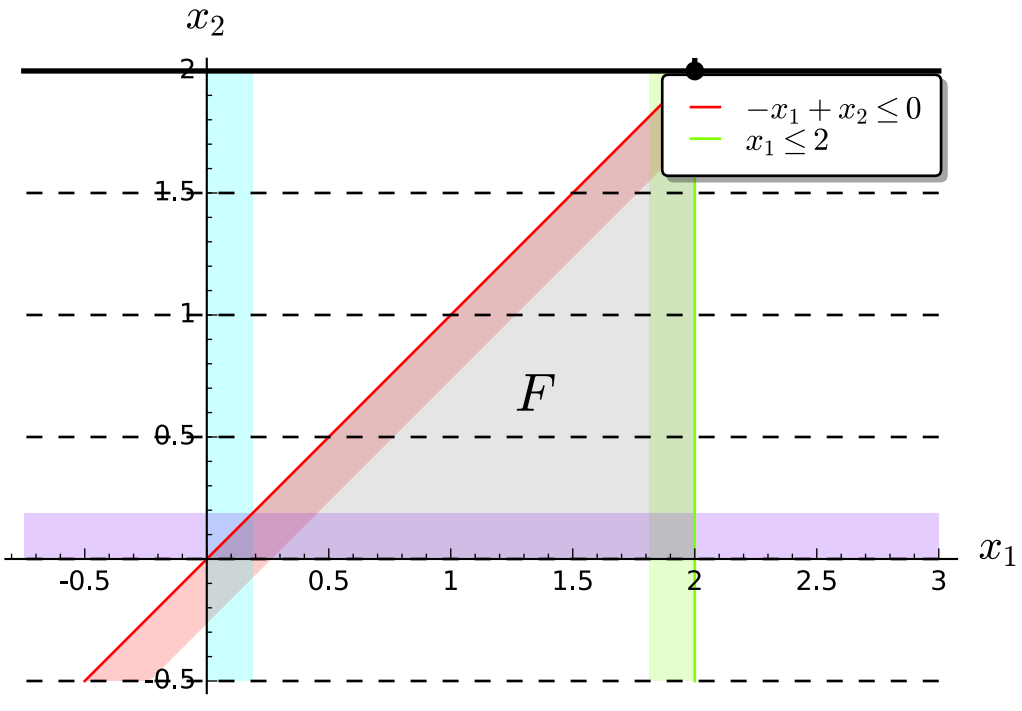
```
%typeset_mode True
A = ([-1, 1], [1, 0])
b = (0,2)
c = (0,1)
P = InteractiveLPProblemStandardForm(A, b, c, ["x1", "x2"])
P.plot()
view(P)
D = P.initial_dictionary()
view(D)
```



$$\begin{aligned} \max \quad & x_2 \\ -x_1 + x_2 &\leq 0 \\ x_1 &\leq 2 \\ x_1, x_2 &\geq 0 \end{aligned}$$

$$\begin{array}{|l|}\hline x_3 = 0 + x_1 - x_2 \\ x_4 = 2 - x_1 \\ \hline z = 0 \qquad + x_2 \\ \hline \end{array}$$

```
D = P.initial_dictionary()
view(D)
print "D jest dopuszczalne: "+ str(D.is_feasible())
print "D jest optmalne: " + str(D.is_optimal())
```

$$\begin{array}{|l|}\hline x_3 = 0 + x_1 - x_2 \\ x_4 = 2 - x_1 \\ \hline z = 0 \qquad + x_2 \\ \hline \end{array}$$

D jest dopuszczalne: True
D jest optmalne: False

```
print D.possible_entering()
D.enter("x2")
print D.possible_leaving()
D.leave("x3")
view(D)
```

[x2]
[x3]

$$\begin{array}{|l|}\hline x_3 = 0 + x_1 - x_2 \\ x_4 = 2 - x_1 \\ \hline z = 0 \qquad + x_2 \\ \hline \end{array}$$

```
D.update()
view(D)
print D.possible_entering()
```

$$\begin{array}{|l|}\hline x_2 = 0 + x_1 - x_3 \\ x_4 = 2 - x_1 \\ \hline z = 0 + x_1 - x_3 \\ \hline \end{array}$$

[x1]

```
D.enter("x1")
print D.possible_leaving()
D.leave("x4")
view(D)
```

[x4]

$$\begin{array}{|l|}\hline x_2 = 0 + x_1 - x_3 \\ x_4 = 2 - x_1 \\ \hline z = 0 + x_1 - x_3 \\ \hline \end{array}$$

```
D.update()
view(D)
print D.possible_entering()
```

$$\begin{array}{|l|}\hline x_2 = 2 - x_4 - x_3 \\ x_1 = 2 - x_4 \\ \hline z = 2 - x_4 - x_3 \\ \hline \end{array}$$

[]

```
print "D jest dopuszczalne: "+ str(D.is_feasible())
print "D jest optmalne: " + str(D.is_optimal())
```

D jest dopuszczalne: True
D jest optmalne: True

```
P.run_simplex_method()
```

$$\begin{array}{|l|}\hline x_3 = 0 + x_1 - x_2 \\ x_4 = 2 - x_1 \\ \hline z = 0 \qquad + x_2 \\ \hline \end{array}$$

Entering: x_2. Leaving: x_3.

$$\begin{array}{|l|}\hline x_2 = 0 + x_1 - x_3 \\ x_4 = 2 - x_1 \\ \hline z = 0 + x_1 - x_3 \\ \hline \end{array}$$

Entering: x_1. Leaving: x_4.

$$\begin{array}{|l|}\hline x_2 = 2 - x_4 - x_3 \\ x_1 = 2 - x_4 \\ \hline z = 2 - x_4 - x_3 \\ \hline \end{array}$$

The optimal value: 2. An optimal solution: (2, 2).