Linear Programming Online Tools

Quy hoạch tuyến tính: Linear Programming

Phương pháp hình học: Graphical Method

Phương pháp đơn hình: Simplex Method

Phương pháp đơn hình mở rộng: Revised Simplex Method

Phương pháp đơn hình đối ngẫu: Dual Simplex Method

https://www.zweigmedia.com/utilsindex.php?lang=en

http://www.simplexme.com/en/index

https://cbom.atozmath.com/CBOM/Simplex.aspx?q=sm

http://reshmat.ru/simplex\_method\_lpp.html

Bài 2/ Giải bài toán quy hoạch tuyến tính sau đây bằng **phương pháp hình học**:

**Method 1:**

<https://www.zweigmedia.com/utilities/lpg/index.html?lang=en>

-4x + 3y

x + y <= 6

2x + 3y <= 6

x - y <= 2

x >= 0

y >= 0

* Kết quả OK (cả max và min)

(NOT OK)

-4x1 + 3x2

x1 + x2 <= 6

2x1 + 3x2 <= 6

x1 - x2 <= 2

x1 >= 0

x2 >= 0

**Method 2:**

<http://reshmat.ru/graphical_method_lpp.html?MaxOrMin=-1&lx1=-4&lx2=3&a11=1&a21=1&z1=1&b1=6&a12=2&a22=3&z2=1&b2=6&a13=1&a23=-1&z3=1&b3=2&step=2&count=3#b>

* Kết quả OK (cả max và min)

**Method 3:**

<https://cbom.atozmath.com/CBOM/Simplex.aspx?q=gm&q1=2%603%60MAX%60Z%60x1%2cx2%60-4%2c3%601%2c1%3b2%2c3%3b1%2c-1%60%3c%3d%2c%3c%3d%2c%3c%3d%606%2c6%2c2%60%60F%60false%60true%60false%60true%60false%60false%60true%601&dp=4&do=1#PrevPart>

* Kết quả OK (cả max và min)

Bài 3/ Giải bài toán quy hoạch tuyến tính sau đây bằng phương pháp đơn hình:

**Method 1:**

<https://www.zweigmedia.com/simplex/simplex.php?lang=en>

Maximize p = 2x1 + 15x2 - 5x3 + 8x4 subject to

3x1 + 10x2 + x3 - x4 <= 25

x1 + 5x2 + x3 + 2x4 <= 10

2x1 - 5x2 + 2x3 + 10x4 <= 26

* Kết quả OK

**Method 2:**

<http://reshmat.ru/simplex_method_lpp.html?maxOrMin=max&l1=2&l2=15&l3=-5&l4=8&a11=3&a12=10&a13=1&a14=-1&z1=1&b1=25&a21=1&a22=5&a23=1&a24=2&z2=1&b2=10&a31=2&a32=-5&a33=2&a34=10&z3=1&b3=26&step=2&sizeA=4&sizeB=3#b>

* Kết quả OK

**Method 3:**

<https://cbom.atozmath.com/CBOM/Simplex.aspx?q=sm&q1=4%603%60MAX%60Z%60x1%2Cx2%2Cx3%2Cx4%602%2C15%2C-5%2C8%603%2C10%2C1%2C-1%3B1%2C5%2C1%2C2%3B2%2C-5%2C2%2C10%60%3C%3D%2C%3C%3D%2C%3C%3D%6025%2C10%2C26%60%60F%60false%60true%60false%60true%60false%60false%60true%601&dp=4&do=1#tblSolution>

* Kết quả OK

**Method 4:**

<https://linprog.com/en/main-simplex-method/result;queryParams=%7B%22n%22:3,%22m%22:4,%22max_min%22:1,%22values%22:%5B%5B%223%22,%2210%22,%221%22,%22-1%22,%2225%22%5D,%5B%221%22,%225%22,%221%22,%222%22,%2210%22%5D,%5B%222%22,%22-5%22,%222%22,%2210%22,%2226%22%5D%5D,%22function%22:%5B%222%22,%2215%22,%22-5%22,%228%22%5D,%22equalSign%22:%5B%222%22,%222%22,%222%22%5D%7D>

* Kết quả OK

Bài 4/ Giải bài toán quy hoạch tuyến tính sau đây bằng phương pháp đơn hình mở rộng:

**Method 1:**

<https://www.zweigmedia.com/simplex/simplex.php?lang=en>

Minimize p = -x1 - x2 + x3 + x5 subject to

3x1 + 2x2 - x4 = 6

-x1 + x2 + x3 = 1

3x1 + x2 + x5 = 9

* Kết quả OK

**Method 2:**

<http://reshmat.ru/simplex_method_lpp.html?maxOrMin=min&l1=-1&l2=-1&l3=1&l4=0&l5=1&a11=1&a12=2&a13=0&a14=-1&a15=0&z1=2&b1=6&a21=-1&a22=1&a23=1&a24=0&a25=0&z2=2&b2=1&a31=3&a32=1&a33=0&a34=0&a35=1&z3=2&b3=9&step=2&sizeA=5&sizeB=3#b>

**Method 3:**

<https://cbom.atozmath.com/CBOM/Simplex.aspx?q=rsm&q1=4%603%60MIN%60Z%60x1%2cx2%2cx3%2cx5%60-1%2c-1%2c1%2c1%603%2c2%2c0%2c0%3b-1%2c1%2c1%2c0%3b3%2c1%2c0%2c1%60%3d%2c%3d%2c%3d%606%2c1%2c9%60%60F%60false%60true%60false%60true%60false%60false%60true%601&dp=4&do=1#PrevPart>

**Method 4:**

<https://linprog.com/en/main-simplex-method/result;queryParams=%7B%22n%22:3,%22m%22:5,%22max_min%22:%222%22,%22values%22:%5B%5B%223%22,%222%22,%220%22,%22-1%22,%220%22,%226%22%5D,%5B%22-1%22,%221%22,%221%22,%220%22,%220%22,%221%22%5D,%5B%223%22,%221%22,%220%22,%220%22,%221%22,%229%22%5D%5D,%22function%22:%5B%22-1%22,%22-1%22,%221%22,%220%22,%221%22%5D,%22equalSign%22:%5B1,1,1%5D%7D>

**Bài 5/ Kiểm tra tính tối ưu của phương án x^0= (0,0,1,2 ) của bài toán:**

**Method 1:**

<https://www.zweigmedia.com/simplex/simplex.php?lang=en>

Minimize p = 5x1 - x2 - x3 + 2x4 subject to

7x1 + 2x2 + 3x3 - x4 >= 1

-4x1 + x2 - x3 + 2x4 = 3

-4x2 - x3 + 3x4 = 5

=> Ko có PATU

**Method 2:**

<http://reshmat.ru/simplex_method_lpp.html?maxOrMin=min&l1=5&l2=-1&l3=-1&l4=2&a11=7&a12=2&a13=3&a14=-1&z1=3&b1=1&a21=-4&a22=1&a23=-1&a24=2&z2=2&b2=3&a31=0&a32=-4&a33=-1&a34=3&z3=2&b3=5&step=2&sizeA=4&sizeB=3#b>

**Method 3:**

<https://linprog.com/en/main-simplex-method/result;queryParams=%7B%22n%22:3,%22m%22:4,%22max_min%22:%222%22,%22values%22:%5B%5B%227%22,%222%22,%223%22,%22-1%22,%221%22%5D,%5B%22-4%22,%221%22,%22-1%22,%222%22,%223%22%5D,%5B%220%22,%224%22,%221%22,%22-3%22,%22-5%22%5D%5D,%22function%22:%5B%225%22,%22-1%22,%22-1%22,%222%22%5D,%22equalSign%22:%5B%223%22,1,1%5D%7D>

=> Ko có PATU

Bài 6/ Giải bài toán quy hoạch tuyến tính sau đây bằng phương pháp đơn hình đối ngẫu:

**Method 1:**

<https://www.zweigmedia.com/simplex/simplex.php?lang=en>

Minimize p = 36x1 + 24x2 + 18x3 subject to

2x1 + 3x2 + x3 >= 80

x1 + x2 + 2x3 >= 80

x1 + x2 + x3 <= 60

**Method 2:**

<http://reshmat.ru/simplex_method_lpp.html?maxOrMin=min&l1=36&l2=24&l3=18&a11=2&a12=3&a13=1&z1=3&b1=80&a21=1&a22=1&a23=2&z2=3&b2=80&a31=1&a32=1&a33=1&z3=1&b3=60&step=2&sizeA=3&sizeB=3#b>

**Method 3:**

<https://linprog.com/en/main-simplex-method/result;queryParams=%7B%22n%22:3,%22m%22:3,%22max_min%22:%222%22,%22values%22:%5B%5B%222%22,%223%22,%221%22,%2280%22%5D,%5B%221%22,%221%22,%222%22,%2280%22%5D,%5B%221%22,%221%22,%221%22,%2260%22%5D%5D,%22function%22:%5B%2236%22,%2224%22,%2218%22%5D,%22equalSign%22:%5B%223%22,%223%22,%222%22%5D%7D>

Bài 6: Giải từ bài toán đối ngẫu (D)

<https://www.zweigmedia.com/simplex/simplex.php?lang=en>

Maximize p = 80y1 + 80y2 + 60y3 subject to

2y1 + y2 + y3 <= 36

3y1 + y2 + y3 <= 24

y1 + 2y2 + y3 <= 18

y1 >= 0

y2 >= 0

y3 <= 0

**Method 3:**

<https://linprog.com/en/main-simplex-method/result;queryParams=%7B%22n%22:3,%22m%22:3,%22max_min%22:1,%22values%22:%5B%5B%22%202%22,%22%201%22,%22%201%22,%22%2036%22%5D,%5B%22%203%22,%22%201%22,%22%201%22,%22%2024%22%5D,%5B%22%201%22,%22%202%22,%22%201%22,%22%2018%22%5D%5D,%22function%22:%5B%22%2080%22,%22%2080%22,%22%2060%22%5D,%22equalSign%22:%5B%222%22,%222%22,%222%22%5D%7D>

Ref:

<https://www.youtube.com/watch?v=qymtNWJigho&ab_channel=AndrewPaluch>

<https://www.youtube.com/watch?v=mk94kjR9gPs&ab_channel=AndrewPaluch>

<https://www.youtube.com/watch?v=gvbJWB_1COo&ab_channel=AndrewPaluch>

<https://www.youtube.com/@AndrewPaluch/search?query=Production-Scheduling>

Linear programming problem of optimal production schedule by month