

```

1 %% LP definition
2 % x = [A; B; x3; x4];
3 % x3,x4: slack variables
4 Aeq = [2 1 1 0;
5        1 3 0 1];
6 beq = [8; 15];
7 c = [-3/2; -1; 0; 0];
8
9 f = @(a,b) c'*[a; b; 0; 0];
10
11
12 %% Meshgrid and contour
13 [X,Y] = meshgrid(0:1:15,0:1:8);
14 Z = zeros(size(X));
15 % TODO: Is there an easier way to do this?
16 for i = 1:size(X,1)
17     for j = 1:size(X,2)
18         Z(i,j) = f(X(i,j),Y(i,j));
19     end
20 end
21
22 figure(1);
23 hold on;
24 title('TTK4135 Assignment 3: Problem 2');
25 xlabel('A [1000 kg]');
26 ylabel('B [1000 kg]');
27
28 contour(X,Y,Z,15);
29 colorbar;
30
31
32 %% Constraints
33 % see separate file for function: ploteqconstraints
34 ploteqconstraints(Aeq, beq, 'r', 'LineWidth', 1.2);
35
36
37 %% Simplex method
38 x0 = [0 0 beq]';
39 [xopt, fval, iterations] = simplex(c, Aeq, beq, x0, 'report');
40
41
42 %% Plot x* and iterations
43 for i = 1:size(iterations, 2)
44     p = [iterations(1,i), iterations(2,i)];
45     ptxt = sprintf('%d: (%.1f,%.1f)', i, p(1), p(2));
46     xshift = 0.3;
47     yshift = 0.3;
48     text(p(1) + xshift, p(2) + yshift, ptxt);
49
50     if i == size(iterations, 2)
51         plot(p(1), p(2), 'g*', 'MarkerSize', 15, 'LineWidth', 1.5);
52     else
53         plot(p(1), p(2), '+', 'MarkerSize', 15, 'LineWidth', 1.5);
54     end
55 end
56
57

```