
```

% Liam Fruzyna
% MATH 4630
% In Class April 1st

% constraints lhs (<=)
r1 = [1 1 1 0 0 0 0 0 0 0 0 0 0];
r2 = [0 0 0 1 1 1 0 0 0 0 0 0];
r3 = [0 0 0 0 0 0 1 1 1 0 0 0];
r4 = [0 0 0 0 0 0 0 0 0 1 1 1];
r5 = [-.25 0 0 -.25 0 0 1 0 0 -.25 0 0];
r6 = [.67 0 0 .67 0 0 .67 0 0 -1 0 0];
r7 = [-.33 0 0 1 0 0 -.33 0 0 -.33 0 0];
r8 = [0 -.54 0 0 -.54 0 0 1 0 0 -.54 0];
r9 = [0 -1 0 0 .33 0 0 .33 0 0 .33 0];
r10 = [0 0 -1 0 0 .43 0 0 .43 0 0 .43];
r11 = [0 0 .43 0 0 .43 0 0 -1 0 0 .43];
r12 = [0 0 -1 0 0 -1 0 0 1 0 0 -1];
% bound the amounts to at least 0
r13 = [-1 0 0 0 0 0 0 0 0 0 0 0];
r14 = [0 -1 0 0 0 0 0 0 0 0 0 0];
r15 = [0 0 -1 0 0 0 0 0 0 0 0 0];
r16 = [0 0 0 -1 0 0 0 0 0 0 0 0];
r17 = [0 0 0 0 -1 0 0 0 0 0 0 0];
r18 = [0 0 0 0 0 -1 0 0 0 0 0 0];
r19 = [0 0 0 0 0 0 -1 0 0 0 0 0];
r20 = [0 0 0 0 0 0 0 -1 0 0 0 0];
r21 = [0 0 0 0 0 0 0 0 -1 0 0 0];
r22 = [0 0 0 0 0 0 0 0 0 -1 0 0];
r23 = [0 0 0 0 0 0 0 0 0 0 -1 0];
r24 = [0 0 0 0 0 0 0 0 0 0 0 -1];

A = vertcat(r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, r13,
    r14, r15, r16, r17, r18, r19, r20, r21, r22, r23, r24);

% constraints (<=) rhs
b = [2000 4000 5000 3000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0]';

% variable matrix
% x = [Ar Ad Ab Pr Pd Pb Cr Cd Cb Wr Wd Wb]

% objective function
f = [0.44 0.65 1.35 0.34 0.55 1.25 0.19 0.40 1.10 0.39 0.60 1.30];

% solution of each quantity
X = linprog(-f,A,b)

% weekly profit
sum(f' .* X)

```

Optimal solution found.

`X =`

```
1.0e+03 *  
  
0  
0  
2.0000000000000000  
1.348773841961852  
0  
2.651162790697674  
1.087193460490463  
0  
2.0000000000000000  
3.0000000000000000  
0  
0
```

`ans =`

```
1.004910335213231e+04
```

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