

Solution:

$$x_1 = 0, x_2 = 8, x_3 =$$

Minimize: $x_1 - 2x_2 - x_3 = -17$

Maximize: $-x_1 + 2x_2 + x_3 = 17$

Linprog :

```
A = [3 1 -4; 1 -1 -1; 1 -2 6; -1 2 1];  
b = [4;10;9;17];  
c = [1;-2;-1];  
lb=zeros(3,1);  
options = optimset('Display', 'iter', 'LargeScale','off','Simplex','on');  
[x,fval,exitflag,output] = linprog(c,A,b,[],[],lb,[],[], options)
```

Linprog Output

Phase 2: Minimize using simplex.

Iter	Objective f^*x	Dual Infeasibility
		$A^*y+z-w-f$
0	0	2.23607
1	-8	9
2	-17	0

Optimization terminated.

$x =$

0
8
1

```
fval =  
-17  
  
exitflag =  
1  
  
output =  
iterations: 2  
algorithm: 'medium scale: simplex'  
cgiterations: []  
message: 'Optimization terminated.'  
constrviolation: 0  
firstorderopt: 0
```

d) Si la 4ème contrainte n'existe pas, quel serait le résultat ?

Résultat obtenu : U = 1, le problème n'est pas borné. (Problem is unbounded.)