

§4.14: UNRESTRICTED-IN-SIGN VARIABLES

1.] Use the simplex algorithm to solve the following LP:

$$\text{Maximize: } z = 2x_1 + x_2$$

$$\text{Subject to: } 3x_1 + x_2 \leq 6$$

$$x_1 + x_2 \leq 4$$

$$x_1 \geq 0, x_2 \text{ unrestricted}$$

Row	Basic		RHS
0	z		
1			
2			

Row	Basic		RHS
0'	z		
1'			
2'			

Row	Basic		RHS
0''	z		
1''			
2''			

- 2.] PantCo manufactures pants. During each of the next six months they can sell up to the number of pants given in the table below. Demand that is not met during a month is lost. Thus, for example, PantCo can sell up to 500 pants during month 1. A pair of pants sells for \$40, requires 2 hours of labor, and uses \$10 of raw material. At the beginning of month 1, PantCo has 4 workers. A worker can work at making pants up to 200 hours per month, and is paid \$2000 per month (irrespective of how many hours they work). At the beginning of each month, workers can be hired or fired. It costs \$1500 to hire and \$1000 to fire a worker. A holding cost of \$5 per pair of pants is assessed against each month's inventory. Determine how PantCo can maximize its profit for the next six months. Ignore the fact that during each month the number of hired and fired workers must be an integer.

Month	Max Demand
1	500
2	600
3	300
4	400
5	300
6	800