

MIDTERM TWO

NOVEMBER 4, 2010

1.
$$\begin{array}{c|ccc|c} x_1 & x_2 & x_3 & 1 & \\ \hline 1 & -2 & -4 & -6 & = x_3 \\ -1^* & 2 & 3 & 0 & = x_2 \\ 0 & -2 & 0 & -6 & \Rightarrow \min \end{array} \quad \begin{array}{c|ccc|c} x_2 & x_2 & x_3 & 1 & \\ \hline -1 & 0 & -1 & -6 & = x_3 \\ -1 & 2 & 3 & 0 & = x_1 \\ 0 & -2 & 0 & -6 & \Rightarrow \min \end{array} \quad \begin{array}{c|ccc|c} x_2 & x_3 & 1 & \\ \hline -1 & -1 & -6 & = x_3 \\ 1 & 3 & 0 & = x_1 \\ -1 & 0 & 6 & \Rightarrow \min \end{array}$$

BAD ROW

LP INFEASIBLE, $\min = \infty$

2.
$$\begin{array}{c|ccc|c} x_1 & x_2 & x_4 & 1 & \\ \hline 2 & 2 & -4 & 3 & = x_3 \\ -2^* & 2 & -1 & 0 & = x_4 \\ 0 & 2 & 2 & -3 & \Rightarrow \min \end{array} \quad \begin{array}{c|ccc|c} x_4 & x_2 & x_4 & 1 & \\ \hline -1 & 3 & -5 & 3 & = x_3 \\ -\frac{1}{2} & 1 & -\frac{1}{2} & 0 & = x_1 \\ 0 & 2 & 2 & -3 & \Rightarrow \min \end{array} \quad \begin{array}{c|cc|c} x_2 & x_4 & 1 & \\ \hline 3 & -6 & 3 & = x_3 \\ 1 & -1 & 0 & = x_1 \\ 2 & 2 & -3 & \Rightarrow \min \end{array} \quad \begin{array}{l} x_1 = x_2 = x_4 = 0 \\ x_3 = 3, \min = -3 \end{array}$$

4.

3	1	3	2	1	2	2	2	1	6	9		
1	6	1	3	1	3	5	1	2	3	1	8	
2	2	0	6	3	1	1	3	1	2	9		
2	3	5	1	1	2	1	1	4	0	1	2	8
6	1	6	1	6	1	6	1	6	1	6	dem/	

$\min = 32$

5.
$$\begin{array}{c|ccccc} & -1 & & -1 & & \\ \hline -1 & 1^* & 2 & 3 & 4 & 2 \\ & 2 & 3 & 0^* & 0 & 2 \\ -1 & 3 & 2^* & 1 & 3 & 1 \\ -1 & 1 & 3 & 4 & 5 & 1^* \\ -1 & 1 & 5 & 2 & 1^* & 6 \end{array} \quad \begin{array}{c|ccccc} & 0 & 0 & 3 & 3 & 1 \\ \hline 0 & 0 & 3 & 3 & 1 \\ 1 & 1 & 0^* & 0 & 1 \\ 2 & 0^* & 1 & 2 & 0 \\ 0 & 1 & 4 & 4 & 0^* \\ 0 & 3 & 2 & 0^* & 5 \end{array}$$

$\min = 1 + 2 + 0 + 1 + 1 = 5$