

Answer Key

Name _____

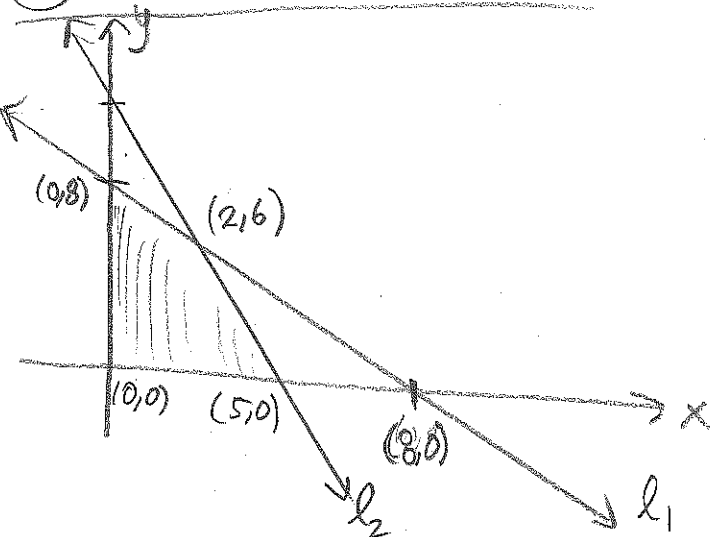
6

Section _____

MA 162 Quiz - October 16, 2014

Maximize $P = x + 8y$
 Subject to $x + y \leq 8$
 $2x + y \leq 10$
 $x \geq 0, y \geq 0$

① Method of Corners



$$l_1: x + y \leq 8$$

$$l_2: 2x + y \leq 10$$

The corners of the solution set are $(0,0)$, $(0,8)$, $(8,0)$, $(2,6)$.

Evaluate P at those points.

x	y	P
0	0	0
0	8	64
5	0	5
2	6	50

$$x=0$$

$$y=8$$

$$P=64$$

② Simplex Method

x	y	u	v	P	const.
1	1	0	0	0	8
2	1	0	1	0	10
-1	-8	0	0	1	0

↑ pivot column
 b/c largest absolute value

ratio
 $8/1=8$
 $10/1=10$
 pivot row b/c smallest ratio

$$R_2 - R_1$$

$$R_3 + 8R_1$$

all nonnegative.
 optimal solution reached.

x	y	u	v	P	const.
1	1	1	0	0	8
1	0	-1	1	0	2
7	0	8	0	1	64

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} y \\ x \\ P \end{pmatrix} = \begin{pmatrix} 8 \\ 2 \\ 64 \end{pmatrix}$$

$$y=8$$

$$v=2$$

$$P=64$$

$$x=u=0$$