

$$\underline{10/3/14}$$

Maximize

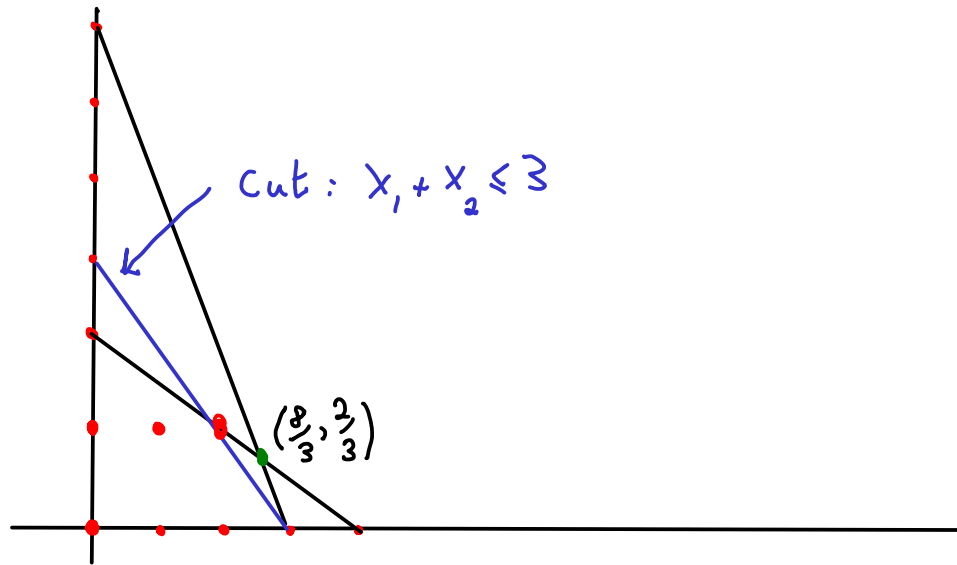
$$3x_1 + 4x_2$$

s.t.

$$x_1 + 2x_2 \leq 4$$

$$2x_1 + x_2 \leq 6$$

$$x_1, x_2 \geq 0 \text{ \& integer}$$



Optimal LP tableau

BV	x_1	x_2	x_3	x_4		RHS
x_0	0	0	$5/3$	$2/3$		$26/3$
x_2	0	1	$2/3$	$-1/3$		$2/3$
x_1	1	0	$-1/3$	$2/3$		$8/3$

Cut :

$$\frac{2}{3}x_3 + \frac{2}{3}x_4 \geq \frac{2}{3} \quad \leftarrow$$

BV	x_1	x_2	x_3	x_4	x_5		RHS
x_0	0	0	$5/3$	$2/3$			$26/3$
x_2	0	1	$2/3$	$-1/3$			$2/3$
x_1	1	0	$-1/3$	$2/3$			$8/3$
x_5	0	0	$-2/3$	$-2/3$	1		$-2/3$

Cnt

$$-\frac{2}{3}x_3 - \frac{2}{3}x_4 + x_5 = -\frac{2}{3}$$

Run dual
Simplex
algorithm

must
be
integer

BV	x_1	x_2	x_3	x_4	x_5		RHS
x_0	0	0	<u>1</u>	0	<u>1</u>		8
x_2	0	1	<u>1</u>	0	$-\frac{1}{2}$		<u>1</u>
x_1	1	0	-1	0	<u>1</u>		2
x_4	0	0	<u>1</u>	<u>1</u>	$-\frac{3}{2}$		<u>1</u>

Ans:

$$x_1 = 2$$

$$x_2 = 1$$

$$x_0 = 8$$

LP is solved. LP optimum is an integer.
= IP optimum

BRANCH & BOUND

