

10/26/09

$$\text{Minimize } 20 - 3x_1 - 4x_2$$

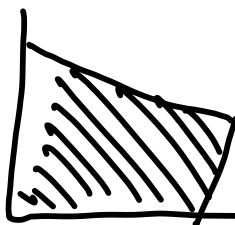
s.t.

$$\frac{2}{5}x_1 + x_2 \leq 3$$

$$\frac{2}{5}x_1 - \frac{2}{5}x_2 \leq 1$$

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

Solve LP
relaxation

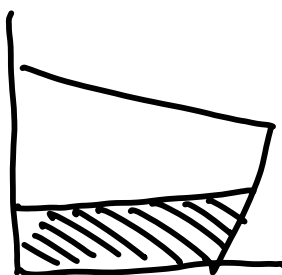


$$x_1 = 3\frac{3}{4}$$

$$x_2 = 1\frac{3}{2}$$

$$x_0 = 2\frac{1}{2}$$

$$x_2 \leq 1$$

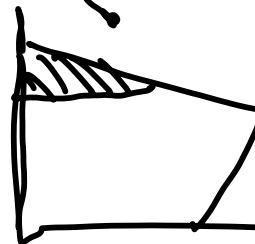


$$x_1 = 3\frac{1}{2}$$

$$x_2 = 1$$

$$x_0 = 5\frac{1}{2}$$

$$x_2 \geq 2$$

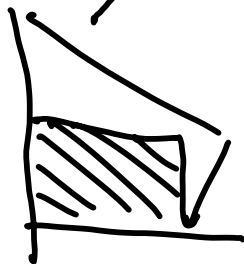


$$x_1 = 2\frac{1}{2}$$

$$x_2 = 2$$

$$x_0 = 4\frac{1}{2}$$

$$x_1 \leq 3$$



$$x_1 = 3$$

$$x_2 = 1$$

$$x_0 = 0$$

$$x_2 \geq 4$$

Infeasible

Implicit Enumeration

minimise $Z = 7x_1 + 3x_2 + 2x_3 - x_4 - 2x_5$

s.t.

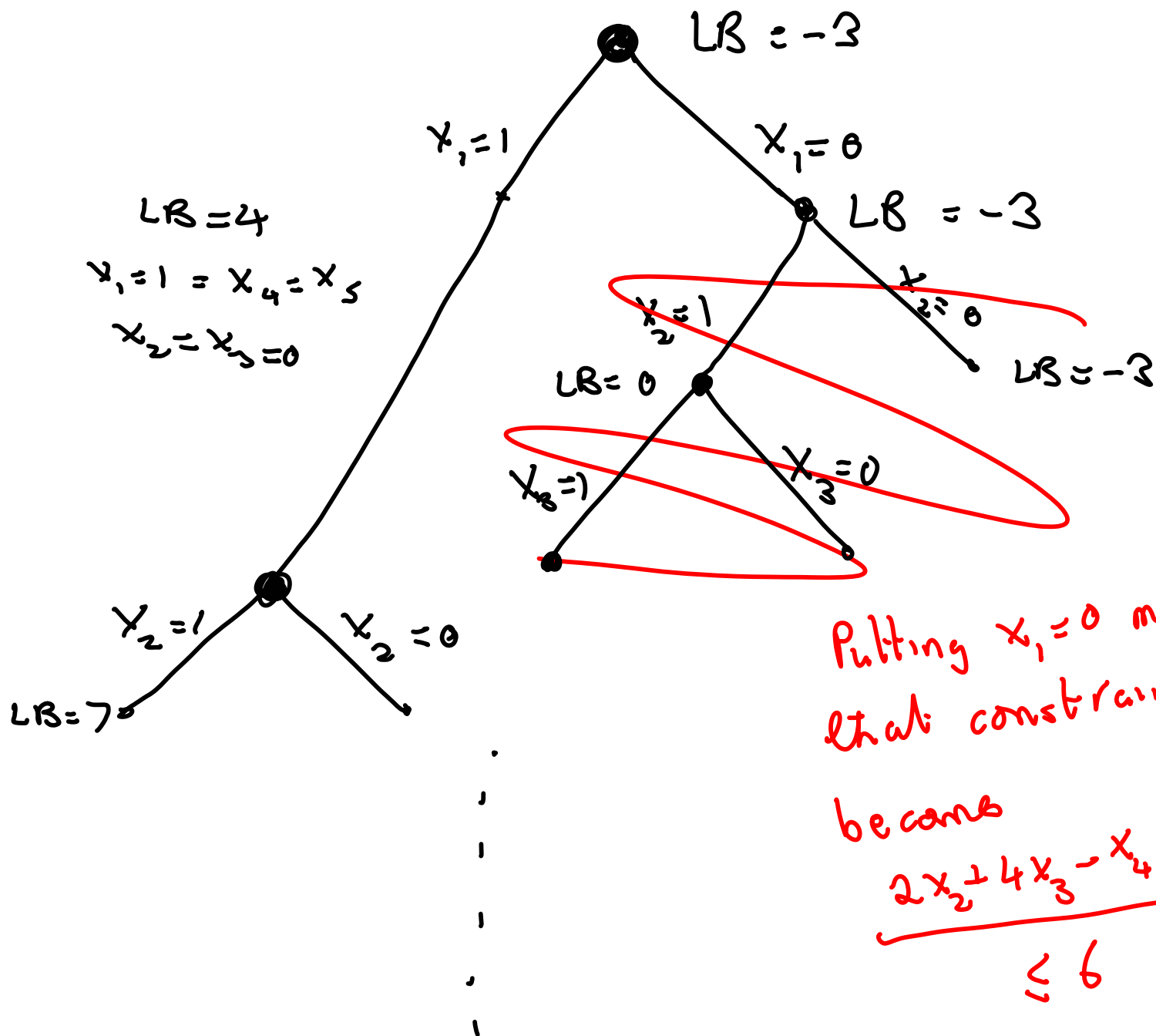
$$4x_1 + 2x_2 - x_3 + 2x_4 + x_5 \geq 3$$

$$4x_1 + 2x_2 + 4x_3 - x_4 - 2x_5 \geq 7$$

$$x_i = 0 \text{ or } 1$$

TopNode: Lower bound: -3 , $x_4 = x_5 = 1$
 $x_1 = x_2 = x_3 = 0$

Infeasible



Putting $x_1 = 0$ means
that constraint 2

becomes

$$\underbrace{2x_2 + 4x_3 - x_4 - 2x_5}_{\leq 6} \geq 7$$

Cutting Planes

