

Objective function.

$$\max \quad x_1 + x_2 + x_3 + x_4 + x_5$$

$$\text{s.t.} \quad x_1 + \quad + 2x_4 + x_5 = 1.$$

$$x_2 - 3x_4 + x_5 = 2$$

$$x_3 + x_4 - 3x_5 = 3$$

$$x_1, \dots, x_5 \geq 0.$$

$$B = (1, 2, 3)$$

	x_1	x_2	x_3	x_4	x_5	
x_1	1	0	0	2	1	1
x_2	0	1	0	-3	1	2
x_3	0	0	1	1	-3	3
$-z$	0	0	0	1	2	-6

$z = 6.$

Objective row.

Pivoting. Add x_4 remove $x_1 \Rightarrow z = \frac{13}{2}$
Pivot

Pivoting and objective:

We changed objective value when we zero out x_4 's coefficient in objective row.

- If coefficient is positive: Subtract mult. of x_i 's row. from objective row.

(remember rightmost value in pivot row is always non-negative)

\Rightarrow subtracting non-negative value from objective value. (Actually decreasing $-Z \Rightarrow$ increasing Z).

- If coefficient is negative:

\Rightarrow decreasing Z .

- Coefficient of a variable x_i in objective row is called x_i 's reduced cost.

Rule #3: Change in Z from pivoting has same sign as reduced cost.

max \rightarrow pivot on vars with positive reduced cost.

min \rightarrow negative reduced cost.

reduced cost is rate of change of z
large \rightarrow change quickly.