- **Summary of the graphical motivation for the simplex method**

$$\max\ Z = 3x_1 + 4x_2$$

subject to
$$3x_1 + 2x_2 + S_1 \qquad = 6$$
$$x_1 + 4x_2 \qquad + S_2 = 4$$
$$S_1 \geq 0, S_2 \geq 0, x_1 \geq 0, x_2 \geq 0$$

Simplex Tableau at O

Entering variable

Basic	Z	x_1	x_2	S_1	S_2	RHS	Ratio
Z	1	-3	-4	0	0	0	-
S_1	0	3	2	1	0	6	6/2=3
S_2	0	1	4	0	1	4	4/4=1

Leaving (blocking) variable ← S_2

Simplex Tableau at A

Entering variable

Basic	Z	x_1	x_2	S_1	S_2	RHS	Ratio
Z	1	-2	0	0	1	4	-
S_1	0	5/2	0	1	-1/2	4	8/5
x_2	0	1/4	1	0	1/4	1	4

Leaving (blocking) variable ← S_1

Simplex Tableau at B

Basic	Z	x_1	x_2	S_1	S_2	RHS
Z	1	0	0	4/5	3/5	36/5
x_1	0	1	0	2/5	-1/5	8/5
x_2	0	0	1	-1/10	3/10	3/5

x_2

$x_1 = 0$

D 3

nb(x_1, S_2)
b(S_1, x_2)

$S_1 = 0$

A

nb(S_1, S_2)
b(x_1, x_2)

1

B(8/5, 3/5)

Simplex Path

$S_2 = 0$ 4

2 C

nb(x_1, x_2)
b(S_1, S_2)

O

nb(S_1, x_2)
b(x_1, S_2)

E $x_2 = 0$ x_1