

## EXAMPLE OF CYCLING

$$\begin{aligned}
 \max \quad z &= 2x_1 - 2x_2 + 4x_3 - 30x_4 - 17x_5 \\
 \text{st} \quad &5x_1 - 2x_2 \quad \quad - 18x_4 + 11x_5 \leq 1 \\
 &-5x_1 + 2x_2 + x_3 + 18x_4 - 11x_5 \leq 0 \\
 &2x_1 - x_2 \quad \quad - 8x_4 + 4x_5 \leq 0 \\
 &x_1, \dots, x_5 \geq 0
 \end{aligned}$$

	x <sub>1</sub>	x <sub>2</sub>	x <sub>3</sub>	x <sub>4</sub>	x <sub>5</sub>	b	
z	-2	2	-4	30	17	0	
x <sub>6</sub>	5	-2	0	-18	11	1	
x <sub>7</sub>	-5	2	1	18	-11	0	(Iteration 1)
x <sub>8</sub>	2	-1	0	-8	4	0	

	x <sub>1</sub>	x <sub>2</sub>	x <sub>7</sub>	x <sub>4</sub>	x <sub>5</sub>	b	
z	-22	10	4	102	-27	0	
x <sub>6</sub>	5	-2	0	-18	11	1	
x <sub>3</sub>	-5	2	1	18	-11	0	(Iteration 2)
x <sub>8</sub>	2	-1	0	-8	4	0	

	x <sub>1</sub>	x <sub>2</sub>	x <sub>7</sub>	x <sub>4</sub>	x <sub>8</sub>	b	
z	-17/2	13/4	4	48	27/4	0	
x <sub>6</sub>	-1/2	3/4	0	4	-11/4	1	
x <sub>3</sub>	1/2	-3/4	1	-4	11/4	0	(Iteration 3)
x <sub>5</sub>	1/2	-1/4	0	-2	1/4	0	

	x <sub>3</sub>	x <sub>2</sub>	x <sub>7</sub>	x <sub>4</sub>	x <sub>8</sub>	b	
z	17	-19/2	21	-20	107/2	0	
x <sub>6</sub>	1	0	1	0	0	1	
x <sub>1</sub>	2	-3/2	2	-8	11/2	0	(Iteration 4)
x <sub>5</sub>	-1	1/2	-1	2	-5/2	0	

	$x_3$	$x_2$	$x_7$	$x_5$	$x_8$	b	
z	7	-9/2	11	10	57/2	0	
$x_6$	1	0	1	0	0	1	
$x_1$	-2	1/2	-2	4	-9/2	0	(Iteration 5)
$x_4$	-1/2	1/4	-1/2	1/2	-5/4	0	

	$x_3$	$x_1$	$x_7$	$x_5$	$x_8$	b	
z	-11	9	-7	46	-12	0	
$x_6$	1	0	1	0	0	1	
$x_2$	-4	2	-4	8	-9	0	(Iteration 6)
$x_4$	1/2	-1/2	1/2	-3/2	1	0	

	$x_3$	$x_1$	$x_7$	$x_5$	$x_4$	b	
z	-5	3	-1	28	12	0	
$x_6$	1	0	1	0	0	1	
$x_2$	1/2	-5/2	1/2	-11/2	9	0	(Iteration 7)
$x_8$	1/2	-1/2	1/2	-3/2	1	0	

	$x_2$	$x_1$	$x_7$	$x_5$	$x_4$	b	
z	10	-22	4	-27	102	0	
$x_6$	-2	5	0	11	-18	1	
$x_3$	2	-5	1	-11	18	0	(Repeat Iteration 2)
$x_8$	-1	2	0	4	-8	0	