Example with cycling (due to Beale)

Basis	x_1	x_2	x_3	x_4	x_5	x_6	x_7	r.h.s.
$\geq$ (top)	0	0	0	$-\frac{3}{4}$	+20	$-\frac{1}{2}$	+6	0
x_1	1	0	0	$\frac{1}{4}$*	-8	-1	9	0
x_2	0	1	0	$\frac{1}{2}$	-12	$-\frac{1}{2}$	3	0
x_3	0	0	1	0	0	1	0	1
$\geq$	+3	0	0	0	-4	$-\frac{7}{2}$	+33	0
x_4	4	0	0	1	-32	-4	36	0
x_2	-2	1	0	0	4*	$\frac{3}{2}$	-15	0
x_3	0	0	1	0	0	1	0	1
$\geq$	+1	+1	0	0	0	-2	+18	0
x_4	-12	8	0	1	0	8*	-84	0
x_5	$-\frac{1}{2}$	$\frac{1}{4}$	0	0	1	$\frac{3}{8}$	$-\frac{15}{4}$	0
x_3	0	0	1	0	0	1	0	1
$\geq$	-2	+3	0	$+\frac{1}{4}$	0	0	-3	0
x_6	$\frac{3}{2}$	1	0	$\frac{1}{8}$	0	1	$\frac{21}{2}$	0
x_5	$\frac{1}{16}$	$-\frac{1}{8}$	0	$-\frac{3}{64}$	1	0	$\frac{3}{16}$*	0
x_3	$\frac{3}{2}$	-1	1	$-\frac{1}{8}$	0	0	$\frac{21}{2}$	1
$\geq$	-1	+1	0	$-\frac{1}{2}$	+16	0	0	0
x_6	2*	-6	0	$-\frac{5}{2}$	56	1	0	0
x_7	$\frac{1}{3}$	$-\frac{2}{3}$	0	$-\frac{1}{4}$	$\frac{16}{3}$	0	1	0
x_3	-2	6	1	$\frac{5}{2}$	-56	0	0	1
$\geq$	0	-2	0	$-\frac{7}{4}$	+44	$+\frac{1}{2}$	0	0
x_1	1	-3	0	$-\frac{5}{4}$	28	$\frac{1}{2}$	0	0
x_7	0	$\frac{1}{3}$*	0	$\frac{1}{6}$	-4	$-\frac{1}{6}$	1	0
x_3	0	0	1	0	0	1	0	1

SAME AS INITIAL TABLEAU

$$\max \quad \tfrac{3}{4}x_4 - 20x_5 + \tfrac{1}{2}x_6 - 6x_7$$

$$\text{s.t.} \quad x_1 + \tfrac{1}{4}x_4 - 8x_5 - x_6 + 9x_7 = 0$$
$$x_2 + \tfrac{1}{2}x_4 - 12x_5 - \tfrac{1}{2}x_6 + 3x_7 = 0$$
$$x_3 + x_6 = 1$$
$$x_i \geq 0, \quad i = 1, \ldots, 7$$

$$x = \begin{pmatrix} 0 \\ 0 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

very degenerate!

Continue from this tableau using Bland's rule. (pivotting on x_1)