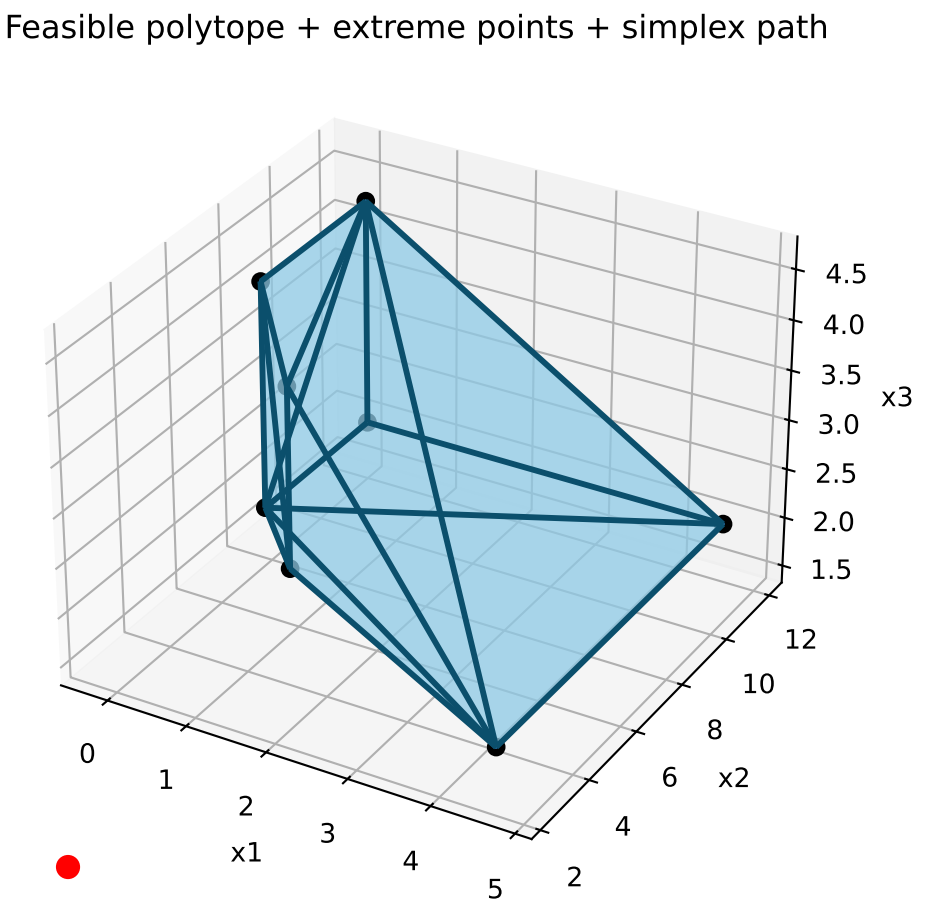
Two-Phase Simplex Report

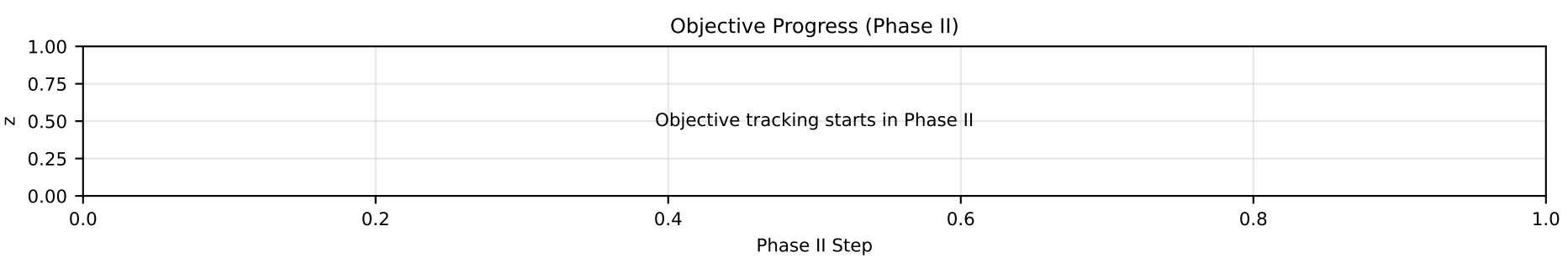


State 1/10 | PHASE I step 0

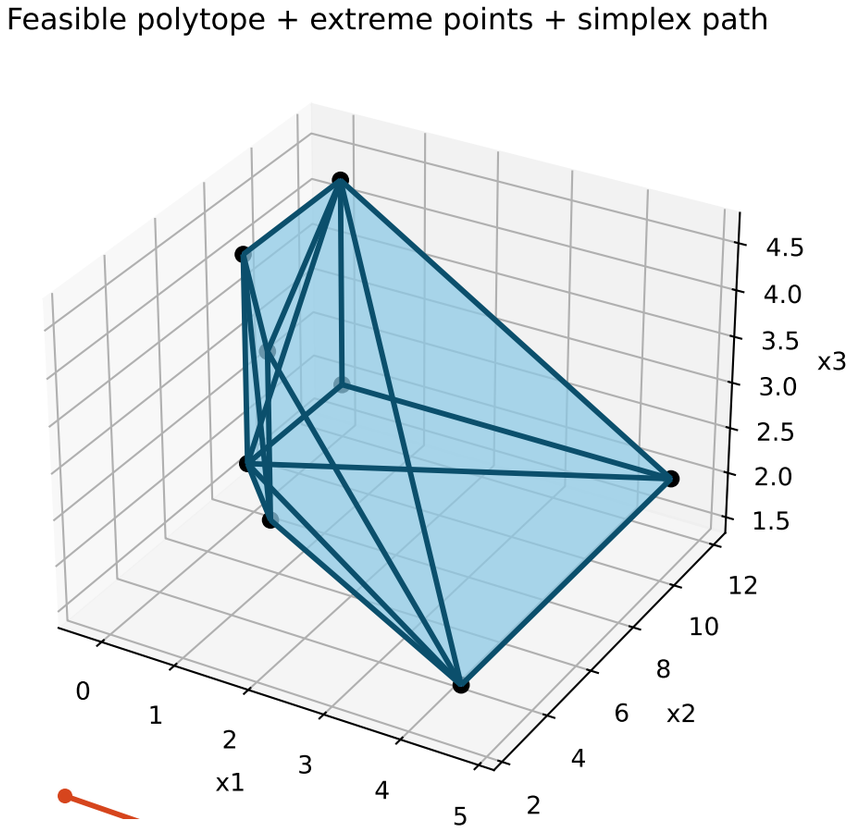
COMMENTS
Teaching Mode | PHASE I
Phase I initialized with artificial objective.

TABLEAU
Current solution: x1=0, x2=0, x3=0
Tableau objective: -38.9944

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	rhs	ratio
R1(s1)	1	0	0	1	0	0	0	0	0	0	0	0	0	12	inf
R2(s2)	0	1	0	0	1	0	0	0	0	0	0	0	0	12	inf
R3(s3)	0	0	1	0	0	1	0	0	0	0	0	0	0	12	inf
R4(a4)	4	4	0	0	0	0	-1	1	0	0	0	0	0	27.3806	inf
R5(s5)	3	0	6	0	0	0	0	0	1	0	0	0	0	25.3127	inf
R6(a6)	0	0	2	0	0	0	0	0	0	-1	1	0	0	3.84349	inf
R7(a7)	2	1	0	0	0	0	0	0	0	0	0	-1	1	7.77031	inf
Rz	-6	-5	-2	0	0	0	1	0	0	1	0	1	0	-38.9944	-



Two-Phase Simplex Report

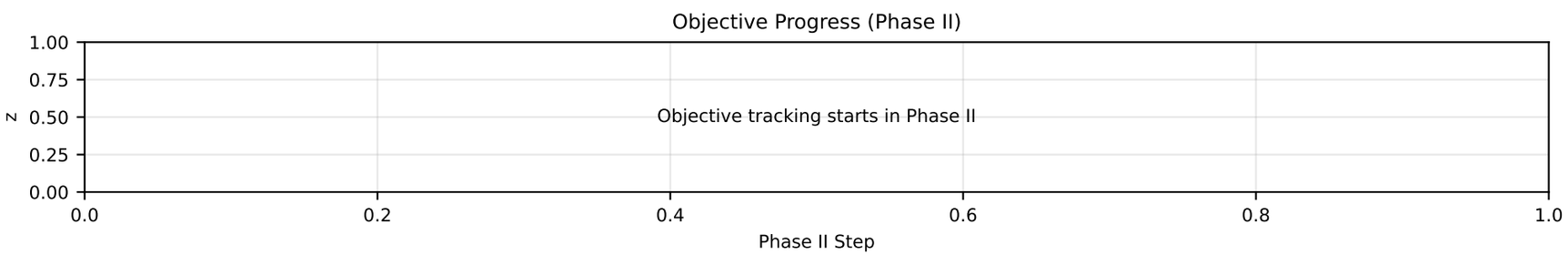


State 2/10 | PHASE I step 1 | ENTER: x1 | LEAVE: a7

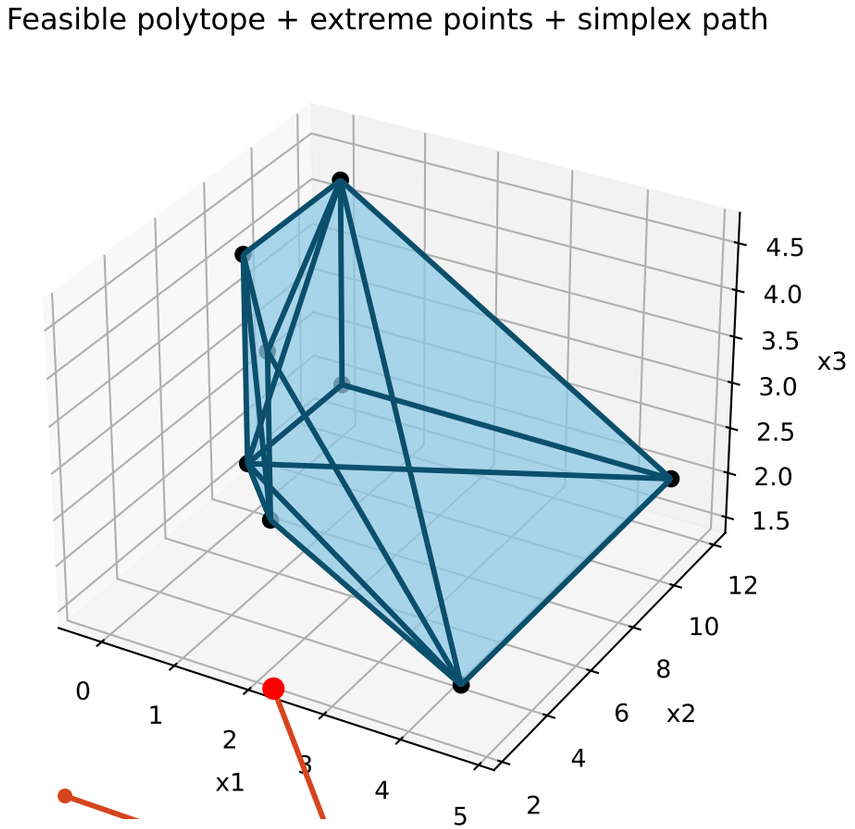
COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: x1 enters, a7 leaves.
Reduced cost of entering variable: -6
Minimum ratio theta*: 3.88515
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=3.88515, x2=0, x3=0
Tableau objective: -15.6835

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	rhs	ratio
R1(s1)	0	-0.5	0	1	0	0	0	0	0	0	0	0.5	-0.5	8.11485	12
R2(s2)	0	1	0	0	1	0	0	0	0	0	0	0	0	12	inf
R3(s3)	0	0	1	0	0	1	0	0	0	0	0	0	0	12	inf
R4(a4)	0	2	0	0	0	0	-1	1	0	0	0	2	-2	11.84	6.84514
R5(s5)	0	-1.5	6	0	0	0	0	0	1	0	0	1.5	-1.5	13.6572	8.43755
R6(a6)	0	0	2	0	0	0	0	0	0	-1	1	0	0	3.84349	inf
R7(x1)	1	0.5	0	0	0	0	0	0	0	0	0	-0.5	0.5	3.88515	3.88515
Rz	0	-2	-2	0	0	0	1	0	0	1	0	-2	3	-15.6835	-



Two-Phase Simplex Report

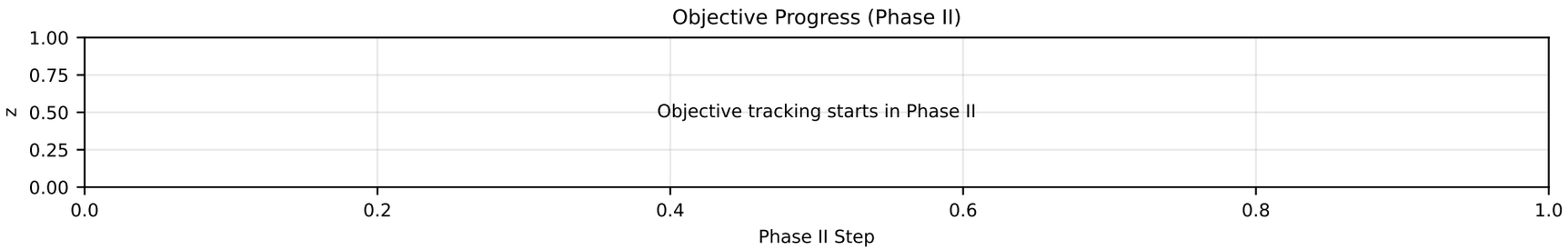


State 3/10 | PHASE I step 2 | ENTER: x2 | LEAVE: a4

COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: x2 enters, a4 leaves.
Reduced cost of entering variable: -2
Entering tie candidates: x2, x3, u7
Minimum ratio theta*: 5.91998
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

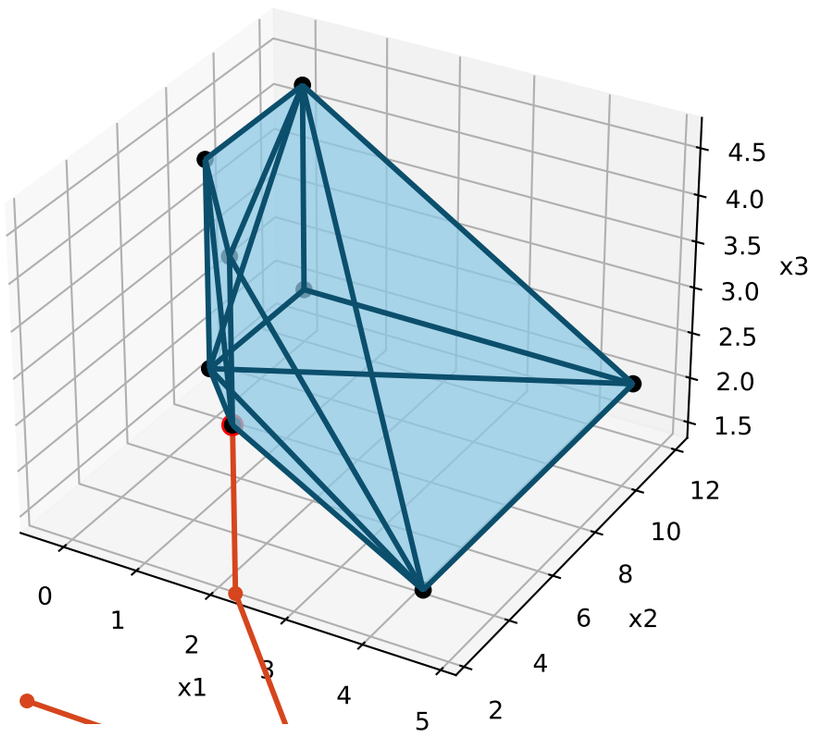
TABLEAU
Current solution: x1=0.925162, x2=5.91998, x3=0
Tableau objective: -3.84349

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	rhs	ratio
R1(s1)	0	0	0	1	0	0	-0.25	0.25	0	0	0	1	-1	11.0748	inf
R2(s2)	0	0	0	0	1	0	0.5	-0.5	0	0	0	-1	1	6.08002	12
R3(s3)	0	0	1	0	0	1	0	0	0	0	0	0	0	12	inf
R4(x2)	0	1	0	0	0	0	-0.5	0.5	0	0	0	1	-1	5.91998	5.91998
R5(s5)	0	0	6	0	0	0	-0.75	0.75	1	0	0	3	-3	22.5372	inf
R6(a6)	0	0	2	0	0	0	0	0	0	-1	1	0	0	3.84349	inf
R7(x1)	1	0	0	0	0	0	0.25	-0.25	0	0	0	-1	1	0.925162	7.77031
Rz	0	0	-2	0	0	0	0	1	0	1	0	0	1	-3.84349	-



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path

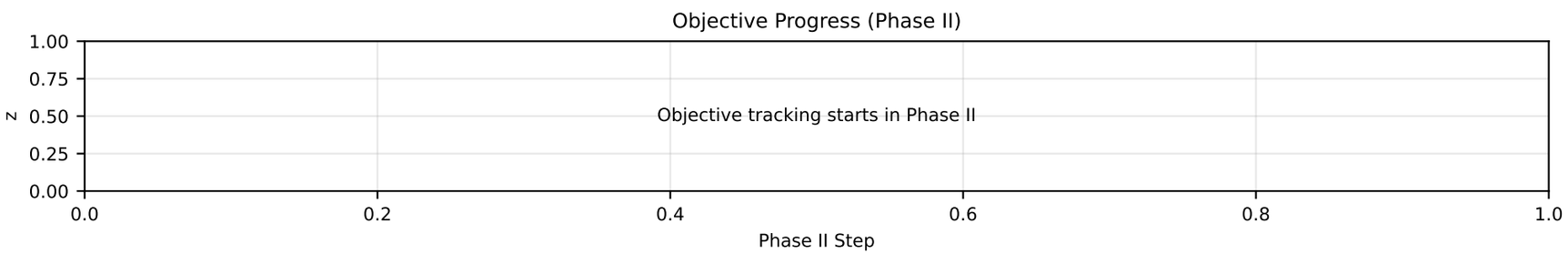


State 4/10 | PHASE I step 3 | ENTER: x3 | LEAVE: a6

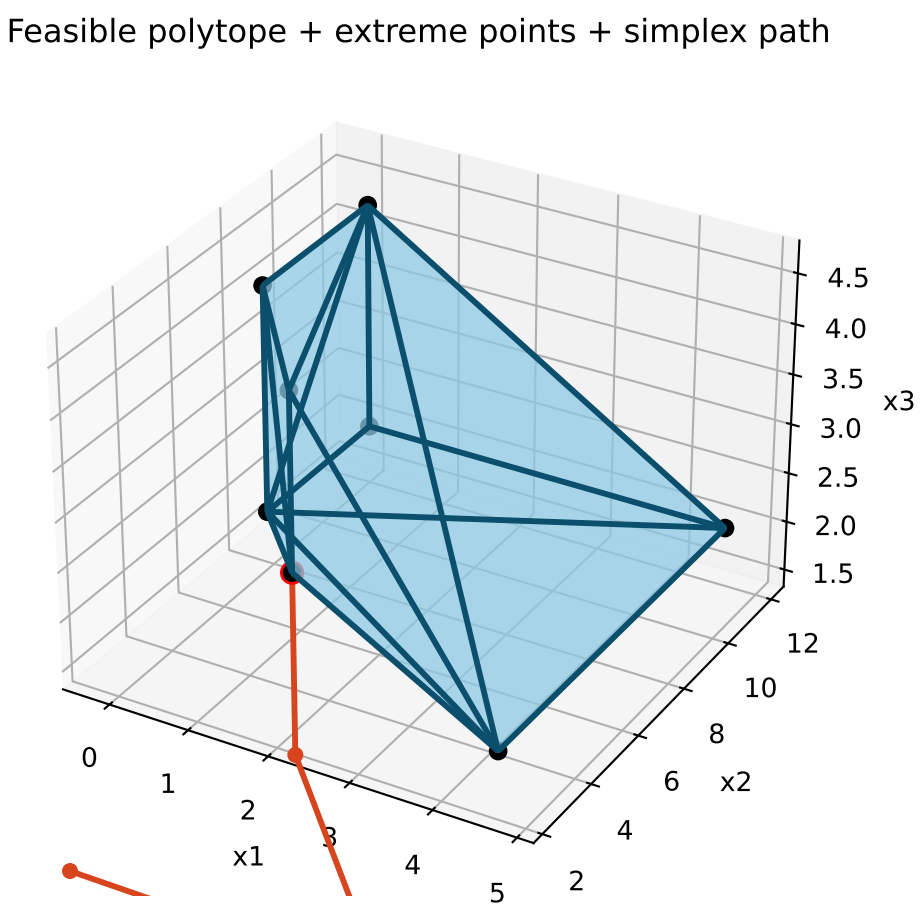
COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: x3 enters, a6 leaves.
Reduced cost of entering variable: -2
Minimum ratio theta*: 1.92175
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=0.925162, x2=5.91998, x3=1.92175
Tableau objective: 0

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	rhs	ratio
R1(s1)	0	0	0	1	0	0	-0.25	0.25	0	0	0	1	-1	11.0748	inf
R2(s2)	0	0	0	0	1	0	0.5	-0.5	0	0	0	-1	1	6.08002	inf
R3(s3)	0	0	0	0	0	1	0	0	0	0.5	-0.5	0	0	10.0783	12
R4(x2)	0	1	0	0	0	0	-0.5	0.5	0	0	0	1	-1	5.91998	inf
R5(s5)	0	0	0	0	0	0	-0.75	0.75	1	3	-3	3	-3	11.0067	3.75619
R6(x3)	0	0	1	0	0	0	0	0	0	-0.5	0.5	0	0	1.92175	1.92175
R7(x1)	1	0	0	0	0	0	0.25	-0.25	0	0	0	-1	1	0.925162	inf
Rz	0	0	0	0	0	0	0	1	0	0	1	0	1	0	-



Two-Phase Simplex Report

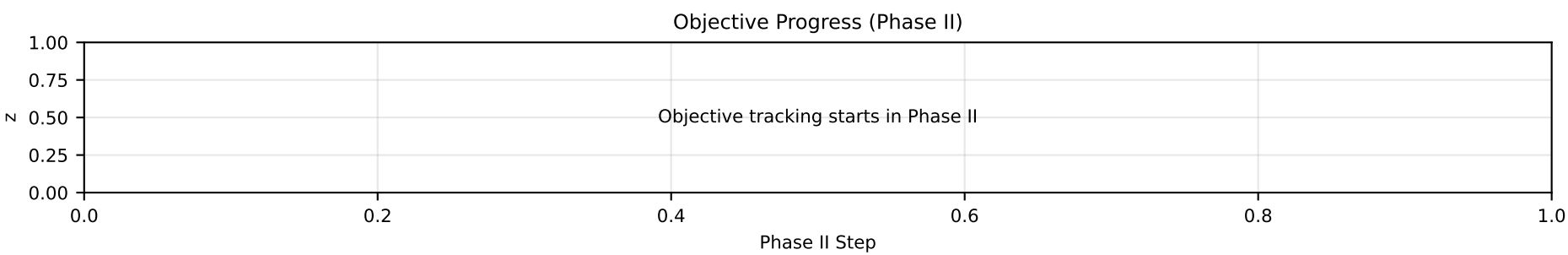


State 5/10 | PHASE I -> PHASE II step 0

COMMENTS
Teaching Mode | Phase Transition
Phase I objective value: 0 (should be 0)
Artificial vars removed: a4, a6, a7
No artificial variable remained basic before cleanup.
Phase I complete. Artificial variables removed before restoring original objective.

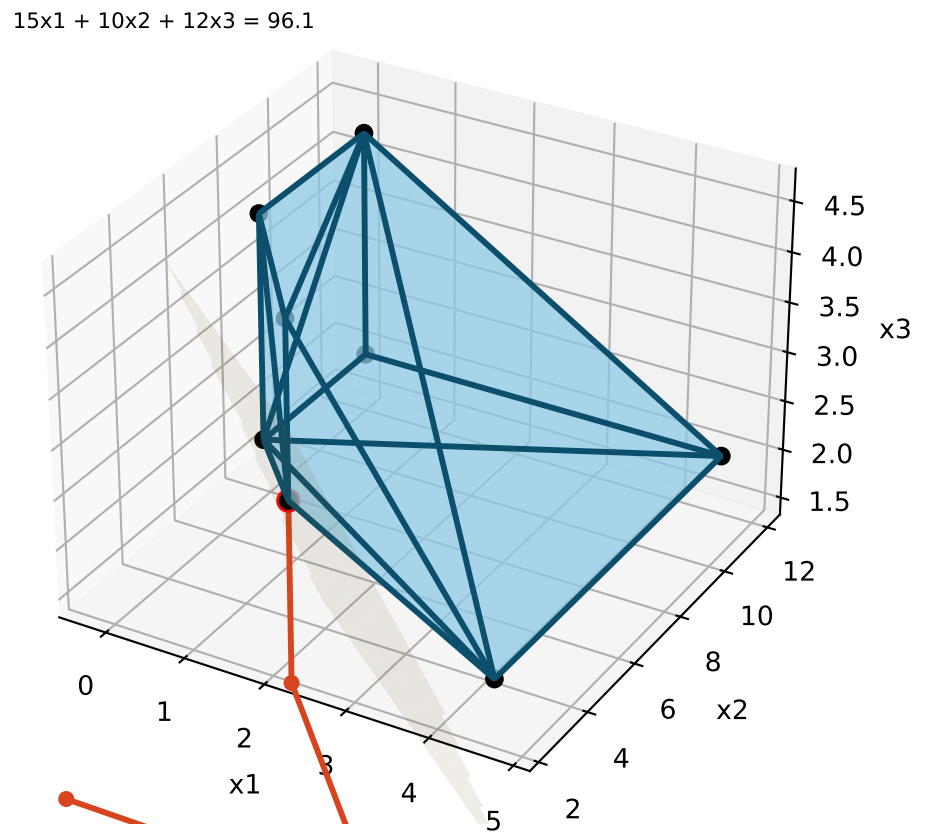
TABLEAU
Current solution: x1=0.925162, x2=5.91998, x3=1.92175
Tableau objective: 0

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	0	0	0	1	0	0	-0.25	0	0	1	11.0748	inf
R2(s2)	0	0	0	0	1	0	0.5	0	0	-1	6.08002	inf
R3(s3)	0	0	0	0	0	1	0	0	0.5	0	10.0783	inf
R4(x2)	0	1	0	0	0	0	-0.5	0	0	1	5.91998	inf
R5(s5)	0	0	0	0	0	0	-0.75	1	3	3	11.0067	inf
R6(x3)	0	0	1	0	0	0	0	0	-0.5	0	1.92175	inf
R7(x1)	1	0	0	0	0	0	0.25	0	0	-1	0.925162	inf
Rz	0	0	0	0	0	0	0	0	0	0	0	-



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path

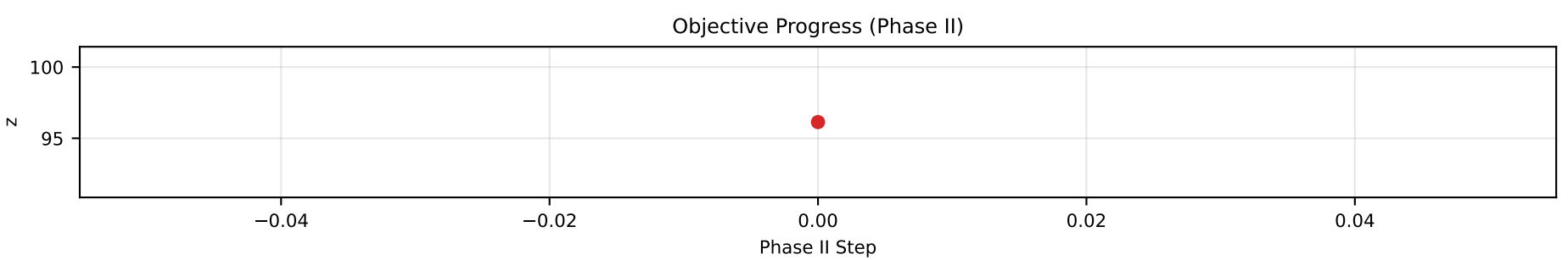


State 6/10 | PHASE II step 0 | Z=96.1382

COMMENTS
Teaching Mode | PHASE II
Phase II objective restored and made basis-consistent.

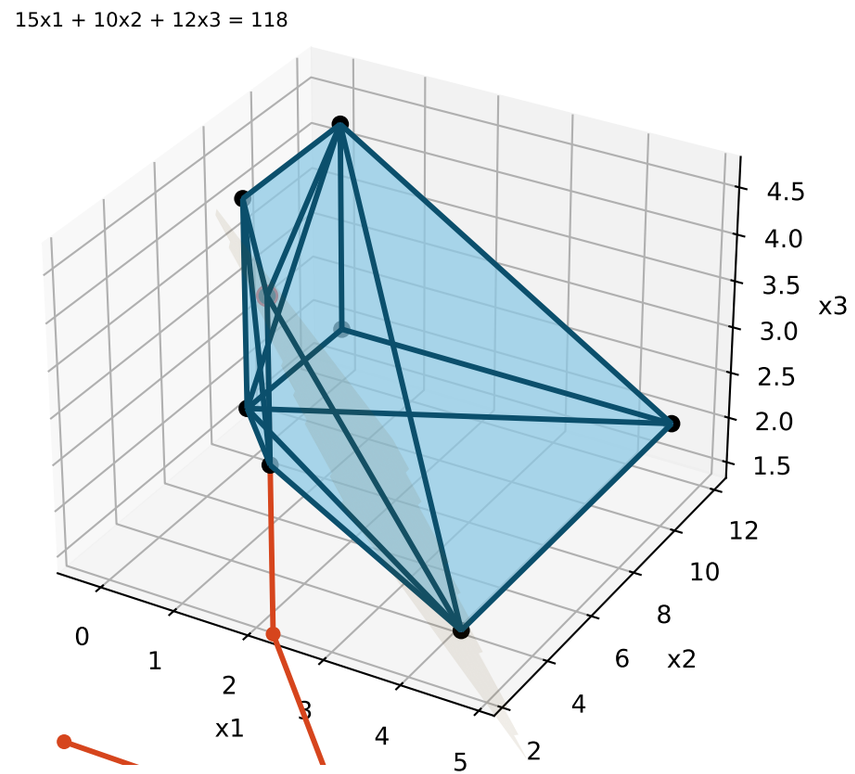
TABLEAU
Current solution: x1=0.925162, x2=5.91998, x3=1.92175
Objective z: 96.1382

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	0	0	0	1	0	0	-0.25	0	0	1	11.0748	inf
R2(s2)	0	0	0	0	1	0	0.5	0	0	-1	6.08002	inf
R3(s3)	0	0	0	0	0	1	0	0	0.5	0	10.0783	inf
R4(x2)	0	1	0	0	0	0	-0.5	0	0	1	5.91998	inf
R5(s5)	0	0	0	0	0	0	-0.75	1	3	3	11.0067	inf
R6(x3)	0	0	1	0	0	0	0	0	-0.5	0	1.92175	inf
R7(x1)	1	0	0	0	0	0	0.25	0	0	-1	0.925162	inf
Rz	0	0	0	0	0	0	-1.25	0	-6	-5	96.1382	-



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path

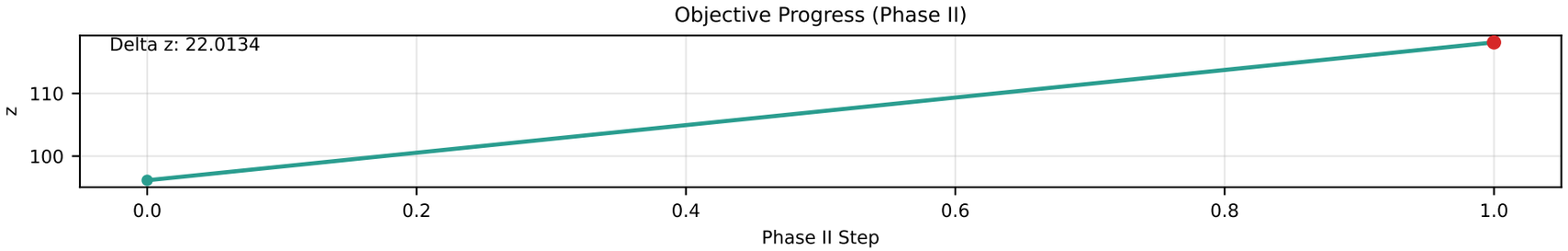


State 7/10 | PHASE II step 1 | ENTER: u6 | LEAVE: s5 | Z=118.152

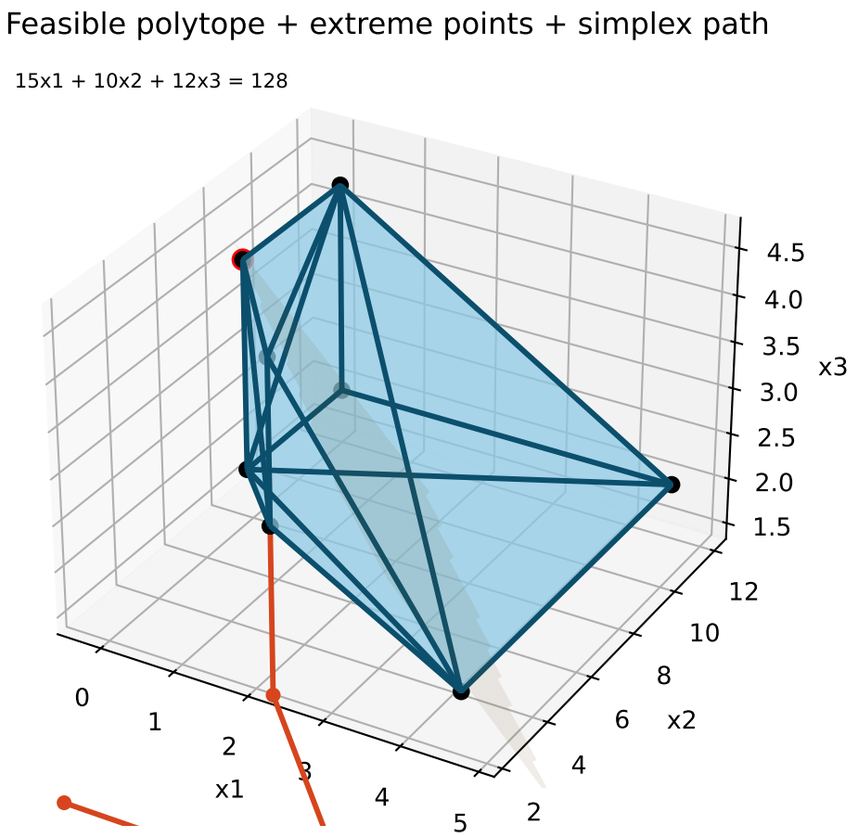
COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: u6 enters, s5 leaves.
Reduced cost of entering variable: -6
Minimum ratio theta*: 3.6689
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=0.925162, x2=5.91998, x3=3.75619
Objective z: 118.152

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	0	0	0	1	0	0	-0.25	0	0	1	11.0748	inf
R2(s2)	0	0	0	0	1	0	0.5	0	0	-1	6.08002	inf
R3(s3)	0	0	0	0	0	1	0.125	-0.166667	0	-0.5	8.24381	20.1565
R4(x2)	0	1	0	0	0	0	-0.5	0	0	1	5.91998	inf
R5(u6)	0	0	0	0	0	0	-0.25	0.333333	1	1	3.6689	3.6689
R6(x3)	0	0	1	0	0	0	-0.125	0.166667	0	0.5	3.75619	inf
R7(x1)	1	0	0	0	0	0	0.25	0	0	-1	0.925162	inf
Rz	0	0	0	0	0	0	-2.75	2	0	1	118.152	-



Two-Phase Simplex Report

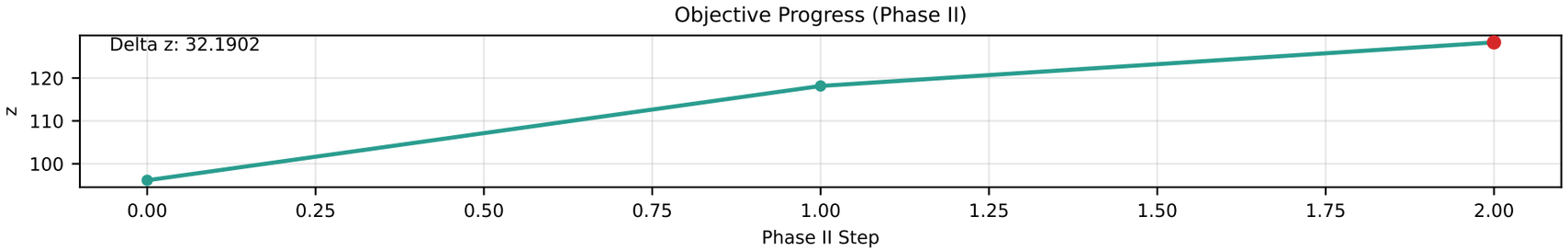


State 8/10 | PHASE II step 2 | ENTER: u4 | LEAVE: x1 | Z=128.328

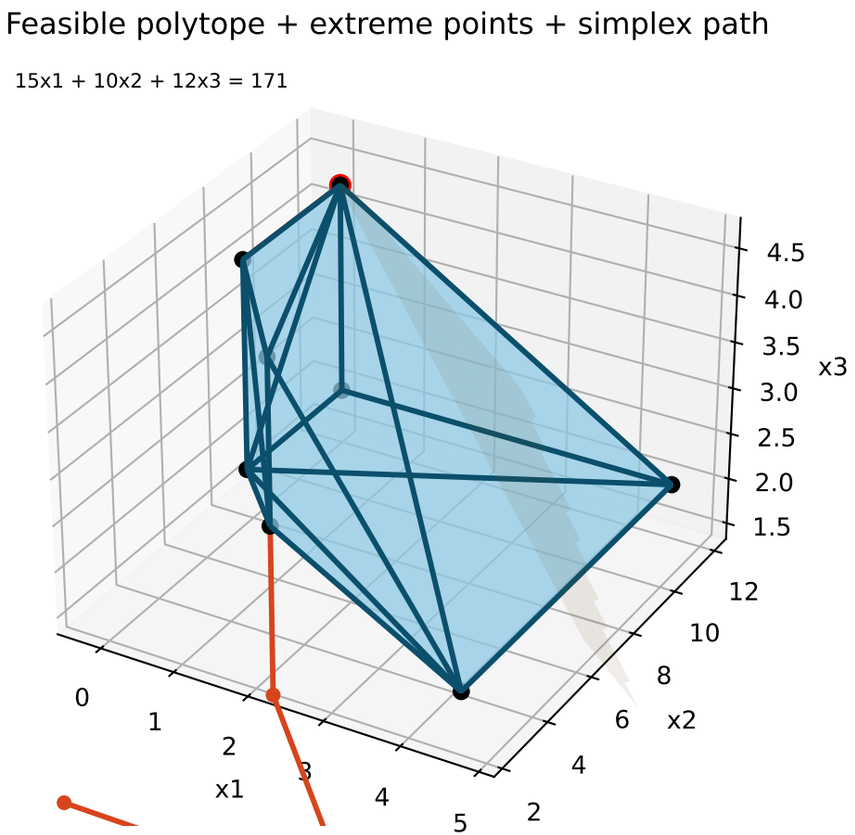
COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: u4 enters, x1 leaves.
Reduced cost of entering variable: -2.75
Minimum ratio theta*: 3.70065
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=0, x2=7.77031, x3=4.21878
Objective z: 128.328

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	1	0	0	1	0	0	0	0	0	0	12	inf
R2(s2)	-2	0	0	0	1	0	0	0	0	1	4.22969	12.16
R3(s3)	-0.5	0	0	0	0	1	0	-0.166667	0	0	7.78122	65.9504
R4(x2)	2	1	0	0	0	0	0	0	0	-1	7.77031	inf
R5(u6)	1	0	0	0	0	0	0	0.333333	1	0	4.59406	inf
R6(x3)	0.5	0	1	0	0	0	0	0.166667	0	0	4.21878	inf
R7(u4)	4	0	0	0	0	0	1	0	0	-4	3.70065	3.70065
Rz	11	0	0	0	0	0	0	2	0	-10	128.328	-



Two-Phase Simplex Report

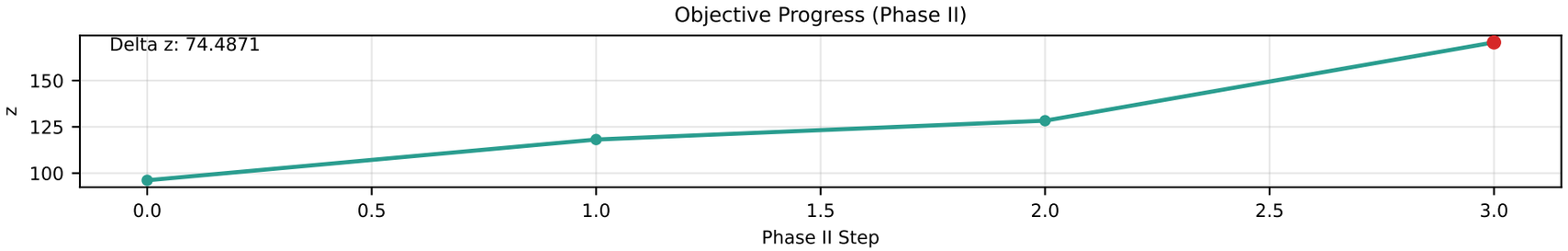


State 9/10 | PHASE II step 3 | ENTER: u7 | LEAVE: s2 | Z=170.625

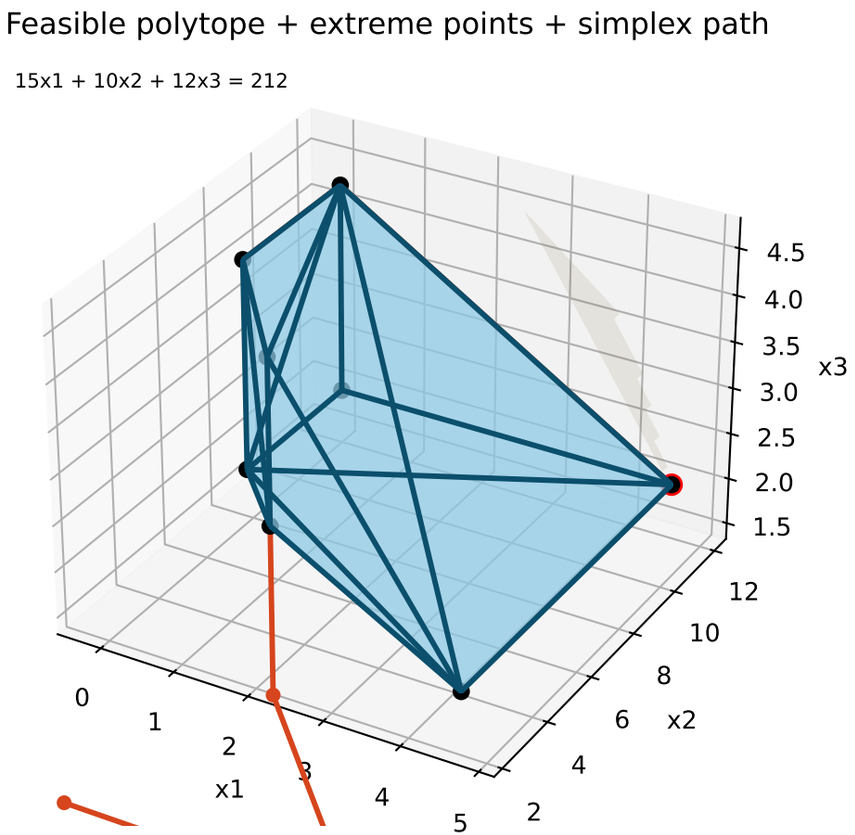
COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: u7 enters, s2 leaves.
Reduced cost of entering variable: -10
Minimum ratio theta*: 4.22969
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=0, x2=12, x3=4.21878
Objective z: 170.625

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	1	0	0	1	0	0	0	0	0	0	12	inf
R2(u7)	-2	0	0	0	1	0	0	0	0	1	4.22969	4.22969
R3(s3)	-0.5	0	0	0	0	1	0	-0.166667	0	0	7.78122	inf
R4(x2)	0	1	0	0	1	0	0	0	0	0	12	inf
R5(u6)	1	0	0	0	0	0	0	0.333333	1	0	4.59406	inf
R6(x3)	0.5	0	1	0	0	0	0	0.166667	0	0	4.21878	inf
R7(u4)	-4	0	0	0	4	0	1	0	0	0	20.6194	inf
Rz	-9	0	0	0	10	0	0	2	0	0	170.625	-



Two-Phase Simplex Report



State 10/10 | PHASE II step 4 | ENTER: x1 | LEAVE: u6 | Z=211.972

COMMENTS
Teaching Mode | Rule: DANTZIG
Pivot: x1 enters, u6 leaves.
Reduced cost of entering variable: -9
Minimum ratio theta*: 4.59406
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU
Current solution: x1=4.59406, x2=12, x3=1.92175
Objective z: 211.972

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	rhs	ratio
R1(s1)	0	0	0	1	0	0	0	-0.333333	-1	0	7.40594	12
R2(u7)	0	0	0	0	1	0	0	0.666667	2	1	13.4178	inf
R3(s3)	0	0	0	0	0	1	0	0	0.5	0	10.0783	inf
R4(x2)	0	1	0	0	1	0	0	0	0	0	12	inf
R5(x1)	1	0	0	0	0	0	0	0.333333	1	0	4.59406	4.59406
R6(x3)	0	0	1	0	0	0	0	0	-0.5	0	1.92175	8.43755
R7(u4)	0	0	0	0	4	0	1	1.33333	4	0	38.9957	inf
Rz	0	0	0	0	10	0	0	5	9	0	211.972	-