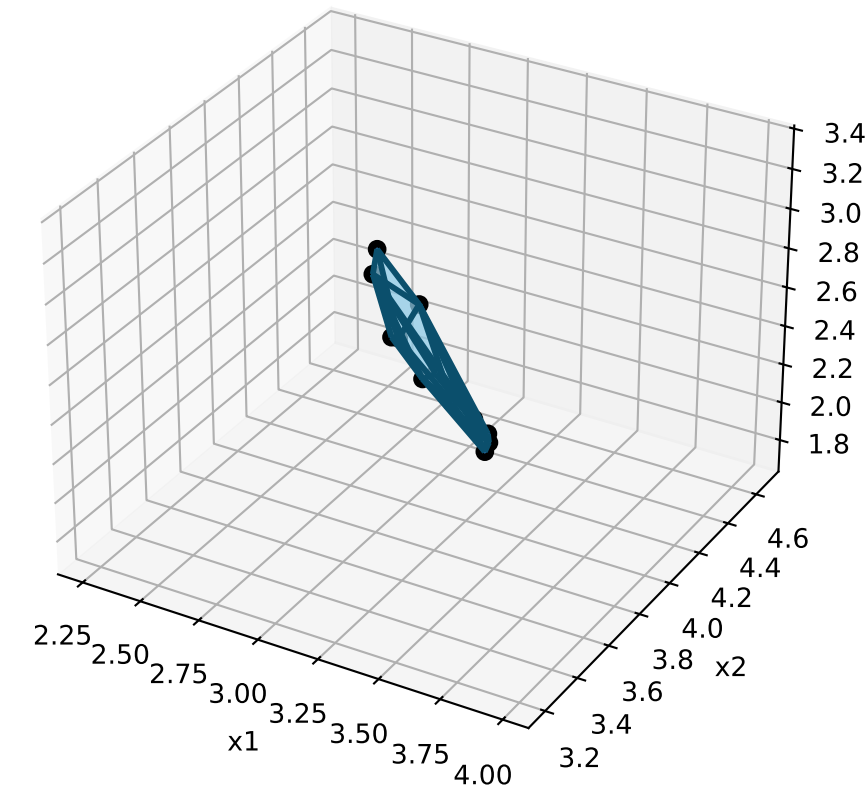


Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 1/31 | BIG-M step 0

COMMENTS

Teaching Mode | BIG-M

Big-M initialized with artificial penalty M=1.5e+07.

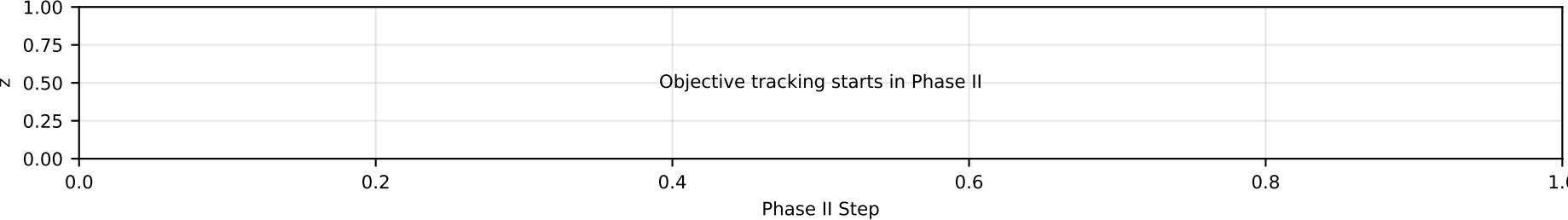
TABLEAU

Current solution: x1=0, x2=0, x3=0

Tableau objective: -7.9895e+09

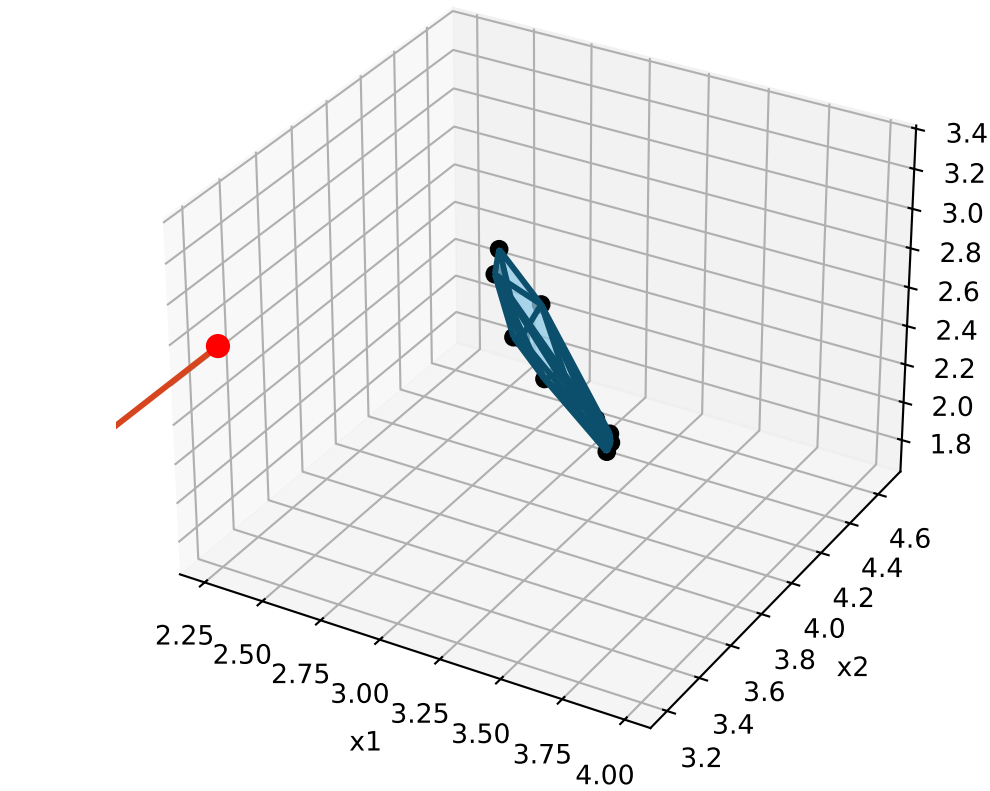
row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio
R1(s1)	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	inf			
R2(s2)	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	inf			
R4(a4)	4	4	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.3806	inf			
R5(s5)	3	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.3127	inf			
R6(a6)	0	0	2	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.84349	inf			
R7(a7)	2	1	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.77031	inf			
R8(a8)	5	5	3	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41.7099	inf			
R9(s9)	5	4	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39.3197	inf			
R10(a10)	5	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55.9447	inf			
R11(a11)	6	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50.3659	inf			
R12(a12)	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.994	inf			
R13(a13)	4	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47.0236	inf			
R14(s14)	3	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35.811	inf			
R15(a15)	5	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46.5579	inf			
R16(s16)	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26.2458	inf			
R17(a17)	3	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26.1909	inf			
R18(s18)	3	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37.4848	inf			
R19(a19)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	6.90233	inf			
R20(s20)	4	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	41.59	inf			
R21(s21)	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	20.4599	inf					
R22(a22)	4	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	42.7001	inf					
R23(a23)	3	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	33.5008	inf				
R24(a24)	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	20.5719	inf			
R25(s25)	6	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	58.3069	inf				
R26(a26)	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	9.62938	inf			
R27(a27)	3	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41.001	inf			
R28(a28)	5	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	43.5467	inf			
Rz	-8.55e+08	-9.15e+08	-8.25e+08	0	0	0	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	-7.9895e+09	-

Objective Progress (Phase II)



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 2/31 | BIG-M step 1 | ENTER: x2 | LEAVE: s14

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: x2 enters, s14 leaves.

Reduced cost of entering variable: -9.15e+08

Minimum ratio theta\*: 5.9685

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=5.9685, x3=0

Tableau objective: -2.52833e+09

	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio
R1(s1)	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	inf
R2(s2)	-0.5	0	-0.166667	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0315	12	
R3(s3)	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	inf		
R4(a4)	2	0	-0.666667	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.50659	6.84514	
R5(s5)	3	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.3127	inf		
R6(a6)	0	0	2	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.84349	inf		
R7(a7)	1.5	0	-0.166667	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.80181	7.77031	
R8(a8)	2.5	0	2.16667	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	-0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.8674	8.34198
R9(s9)	3	0	2.33333	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.4457	9.82992
R10(a10)	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.1337	9.32412	
R11(a11)	3.5	0	4.16667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	-0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.5234	10.0732
R12(a12)	1	0	5.66667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	-0.333333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.057	13.997
R13(a13)	0.5	0	1.83333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	-1.16667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.24413	6.71766
R14(x2)	0.5	1	0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.9685	5.9685	
R15(a15)	1.5	0	0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.16667	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.77843	6.65113	
R16(s16)	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26.2458	inf
R17(a17)	2.5	0	5.83333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.2224	26.1909	
R18(s18)	2	0	6.66667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.333333	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25.5478	18.7424	
R19(a19)	0.5	0	-0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.933829	6.90233	
R20(s20)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.77906	6.93167	
R21(s21)	0.5	0	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.55442	6.81997		
R22(a22)	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.88911	7.11668		
R23(a23)	1	0	3.33333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.62678	8.37519	
R24(a24)	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20.5719	inf		
R25(s25)	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22.4959	9.71782		
R26(a26)	-0.5	0	2.83333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.66088	9.62938		
R27(a27)	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.18998	6.83349		
R28(a28)	2.5	0	3.16667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.7042	8.70933	

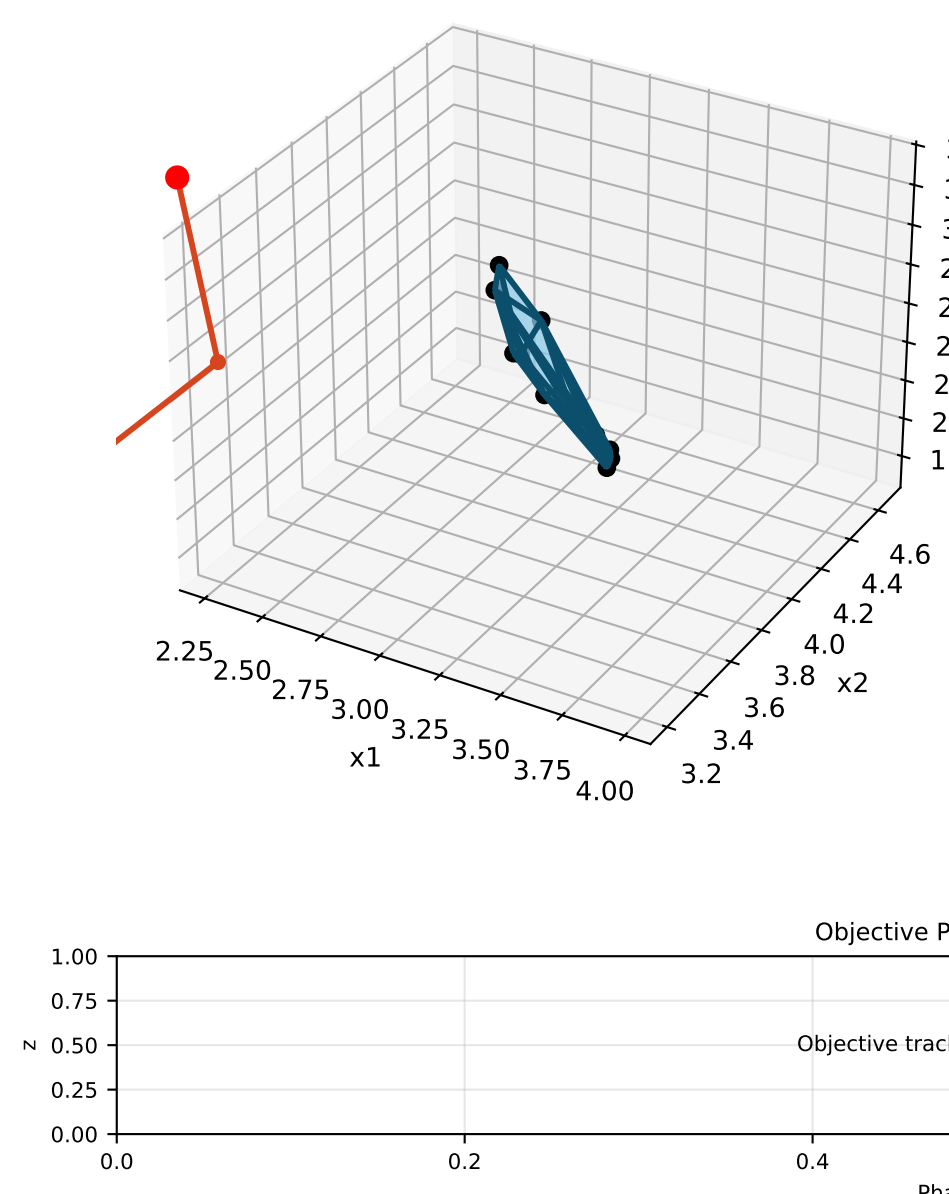
Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 3/31 | BIG-M step 2 | ENTER: x3 | LEAVE: a26

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: x3 enters, a26 leaves.

Reduced cost of entering variable: -6.725e+08

Minimum ratio theta\*: 1.29208

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=5.75315, x3=1.29208

Tableau objective: -1.6594e+09

Row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio	
R1(s1)	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	inf	
R2(s2)	-0.529412	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.176471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.24685	inf	
R3(s3)	0.176471	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0588235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.7079	12
R4(a4)	1.88235	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.705882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.36797	inf	
R5(s5)	4.05882	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.352941	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.5602	4.21878	
R6(a6)	0.352941	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.117647	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25934	1.92175	
R7(a7)	1.47059	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	-0.176471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.01716	inf	
R8(a8)	2.88235	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	-0.705882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.06791	5.47726	
R9(s9)	3.41176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	-0.529412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.4309	6.61959	
R10(a10)	3.05882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	-0.647059	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.3813	3.35562	
R11(a11)	4.23529	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	-0.588235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15.1398	4.92562
R12(a12)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.73524	2.83359		
R13(a13)	0.823529	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	-1.05882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.87532	2.86043		
R14(x2)	0.529412	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.75315	35.811		
R15(a15)	1.64706	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.11765	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.7017	5.73411		
R16(s16)	5.52941	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176471	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22.3695	8.74858	
R17(a17)	3.52941	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176471	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.6853	3.4667	
R18(s18)	3.17647	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0588235	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.934	3.83218	
R19(a19)	0.470588	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.176471	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1.14918	inf	
R20(s20)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5.77906	inf		
R21(s21)	0.411765	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.529412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.20046	inf	
R22(a22)	1.35294	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.882353	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.30495	3.44455	
R23(a23)	1.58824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.470588	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.31986	2.88803	
R24(a24)	5.52941	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.6956	6.85729	
R25(s25)	3.70588	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.764706	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.3276	5.62398	
R26(x3)	-0.176471	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0588235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.29208	1.29208	
R27(a27)	0.529412	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.823529	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.31375	1.72999	
R28(a28)	3.05882	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.647059	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.61261	4.32764	
356(a1)										1.5e+07		1.5e+07		1.5e+07			1.5e+07	0	1.5e+07	0	1.5e+07		1.5e+07		1.12941e+08	1.5e+07		0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	-2.22353e+08	2.37353e+08	1.5e+07	0	1.5e+07		-1.6594e+09			

Objective Progress (Phase II)

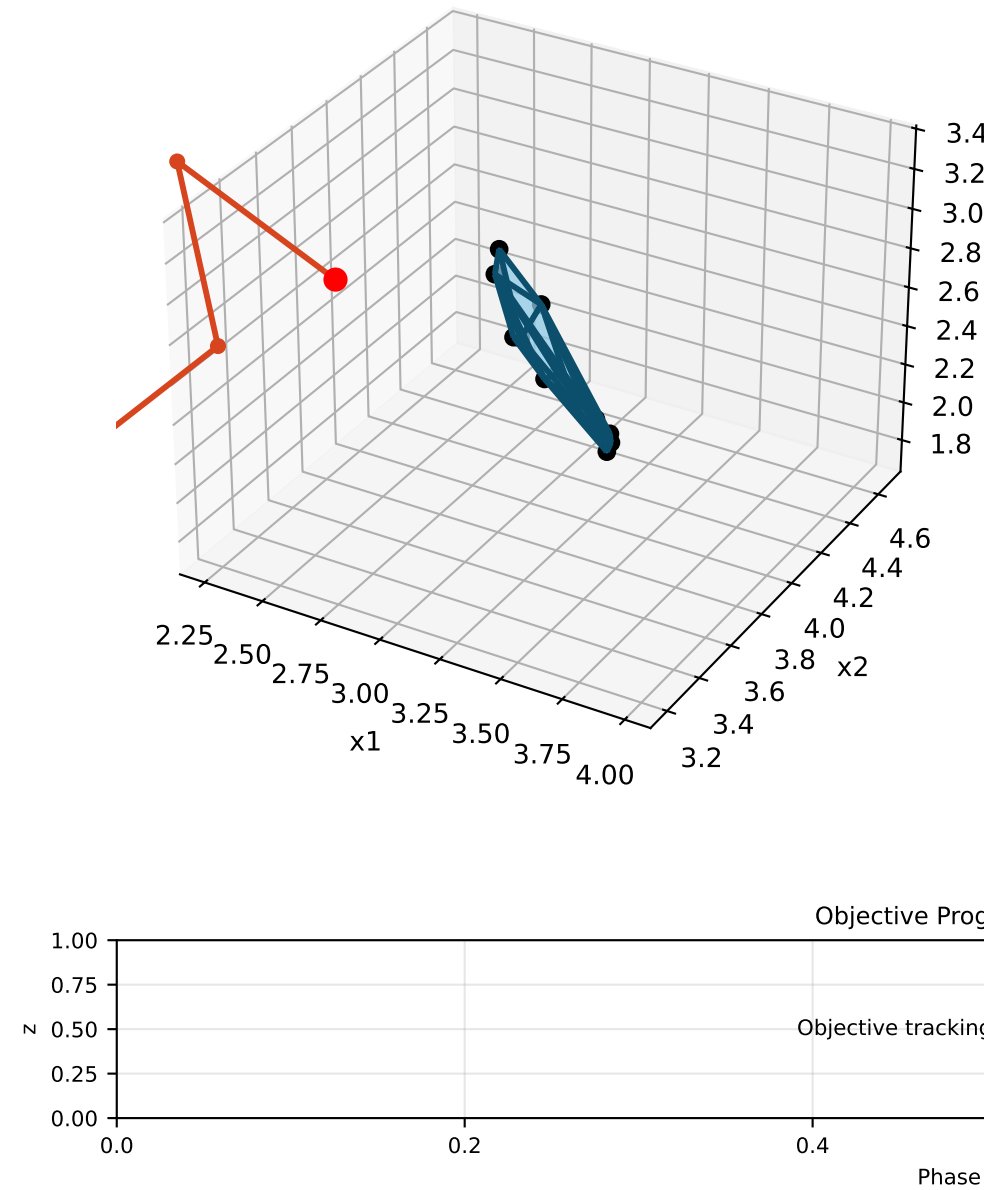
Objective tracking starts in Phase II

Phase II Step



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 4/31 | BIG-M step 3 | ENTER: x1 | LEAVE: a7

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: x1 enters, a7 leaves.

Reduced cost of entering variable: -5.16176e+08

Minimum ratio theta\*: 1.37167

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=1.37167, x2=5.02697, x3=1.53413

Tableau objective: -9.51383e+08

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio				
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0.68	-0.68	0	0	0	0	0	0	0	0	0	0	0	0	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.6283	12			
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	-0.36	0.36	0	0	0	0	0	0	0	0	0	0	0	-0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.97303	inf			
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0.12	-0.12	0	0	0	0	0	0	0	0	0	0	0	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.4659	60.6782	
R4(a4)	0	0	0	0	0	0	-1	1	0	0	0	1.28	-1.28	0	0	0	0	0	0	0	0	0	0	0	-0.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.78602	2.32049	
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	2.76	-2.76	0	0	0	0	0	0	0	0	0	0	0	0.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.9929	4.32643	
R6(a6)	0	0	0	0	0	0	0	0	0	-1	1	0.24	-0.24	0	0	0	0	0	0	0	0	0	0	0	0.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.775222	3.56813	
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	-0.68	0.68	0	0	0	0	0	0	0	0	0	0	0	-0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.37167	1.37167	
R8(a8)	0	0	0	0	0	0	0	0	0	0	0	1.96	-1.96	-1	1	0	0	0	0	0	0	0	0	0	-0.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.11428	3.14601	
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	2.32	-2.32	0	0	1	0	0	0	0	0	0	0	0	-0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.75106	3.64353
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	2.08	-2.08	0	0	0	-1	1	0	0	0	0	0	0	-0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.18559	4.04772
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	2.88	-2.88	0	0	0	0	0	-1	1	0	0	0	-0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.33037	3.57467	
R12(a12)	0	0	0	0	0	0	0	0	0	0	0	1.36	-1.36	0	0	0	0	0	0	0	-1	1	0	0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.99191	4.36762	
R13(a13)	0	0	0	0	0	0	0	0	0	0	0	0.56	-0.56	0	0	0	0	0	0	0	0	0	0	-0.96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.74572	3.49146	
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0.36	-0.36	0	0	0	0	0	0	0	0	0	0	0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.02697	10.8671	
R15(a15)	0	0	0	0	0	0	0	0	0	0	0	1.12	-1.12	0	0	0	0	0	0	0	0	0	0	-0.92	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.44248	2.24746	
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	3.76	-3.76	0	0	0	0	0	0	0	0	0	0	0.84	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14.785	4.04555	
R17(a17)	0	0	0	0	0	0	0	0	0	0	0	2.4	-2.4	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.84414	3.59417	
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	2.16	-2.16	0	0	0	0	0	0	0	0	0	0	0.44	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.5769	5.33107	
R19(a19)	0	0	0	0	0	0	0	0	0	0	0	0.32	-0.32	0	0	0	0	0	0	0	0	0	0	-0.12	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.503686	2.442		
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0.68	-0.68	0	0	0	0	0	0	0	0	0	0	-0.88	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.40739	5.77906	
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0.28	-0.28	0	0	0	0	0	0	0	0	0	0	-0.48	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.63566	7.77255		
R22(a22)	0	0	0	0	0	0	0	0	0	0	0	0.92	-0.92	0	0	0	0	0	0	0	0	0	0	-0.72	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	2.44917	3.18192		
R23(a23)	0	0	0	0	0	0	0	0	0	0	0	1.08	-1.08	0	0	0	0	0	0	0	0	0	0	-0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.14133	3.34954	
R24(a24)	0	0	0	0	0	0	0	0	0	0	0	3.76	-3.76	0	0	0	0	0	0	0	0	0	0	0.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.11113	3.01942	
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	2.52	-2.52	0	0	0	0	0	0	0	0	0	0	-0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.2444	4.67571	
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	-0.12	0.12	0	0	0	0	0	0	0	0	0	0	-0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.53413	inf	
R27(a27)	0	0	0	0	0	0	0	0	0	0	0	0.36	-0.36	0	0	0	0	0	0	0	0	0	0	-0.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.587577	2.48153	
R28(a28)	0	0	0	0	0	0	0	0	0	0	0	2.08	-2.08	0	0	0	0	0	0	0	0	0	0	-0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.41692	3.14258	
										1.5e+07	0	-3.36e+08	3.51e+08	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	5.1e+07	1.5e+07	0	0	0	0	0	0	0	0	0	0	1.5e+07	0	0	1.5e+07	0	0	0	0	0	0	0	0	0	0	0	0	-9.51383e+08	

Objective Progress (Phase II)

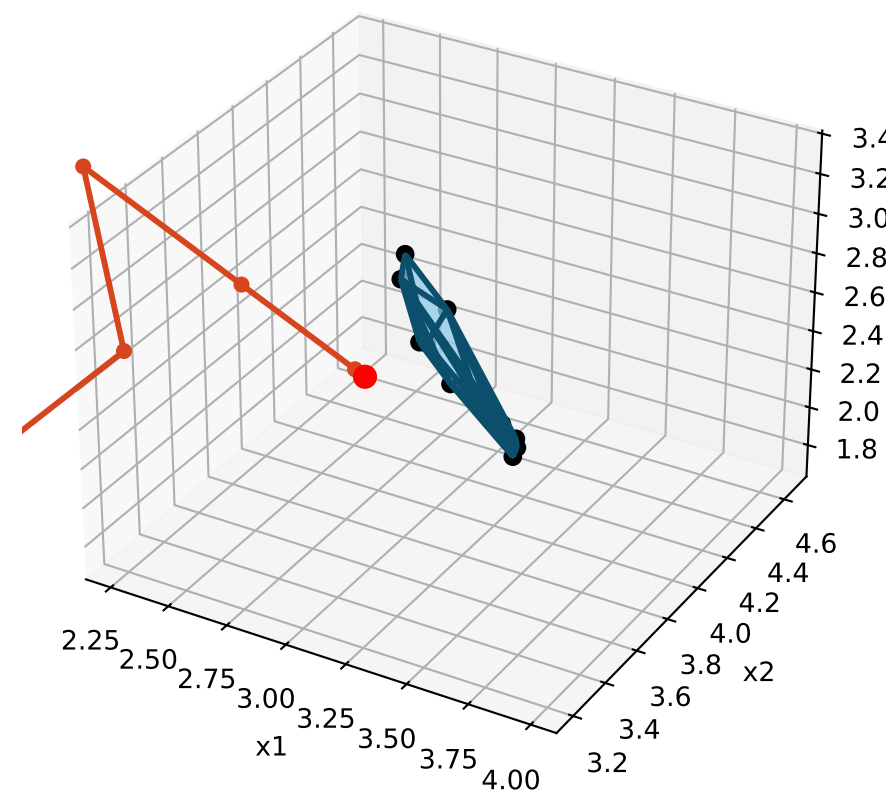
Objective tracking starts in Phase II

Phase II Step



## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 6/31 | BIG-M step 5 | ENTER: u15 | LEAVE: a

COMMENTS

Teaching Mode | Rule: DANTZI

Pivot: u15 enters, a4 leaves

Reduced cost of entering variable: -2.85e+0

Minimum ratio theta\*: 0.12028

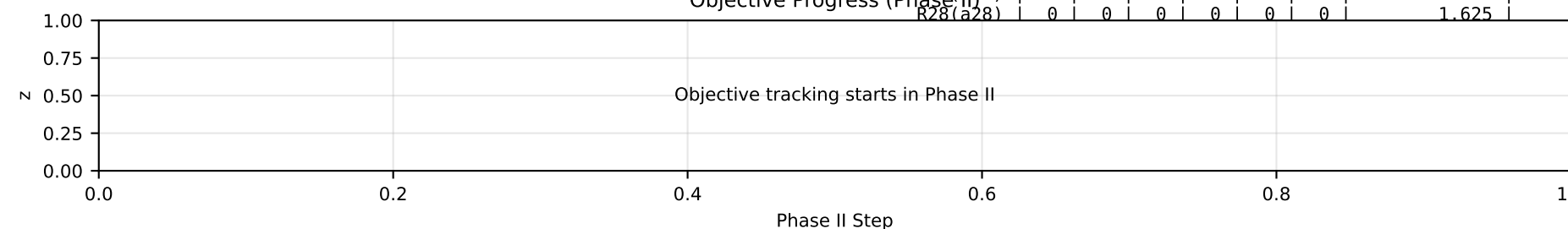
Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=2.32049$ ,  $x_2=4.52466$ ,  $x_3=1.7015$

Tableau objective: -4.84358e+0

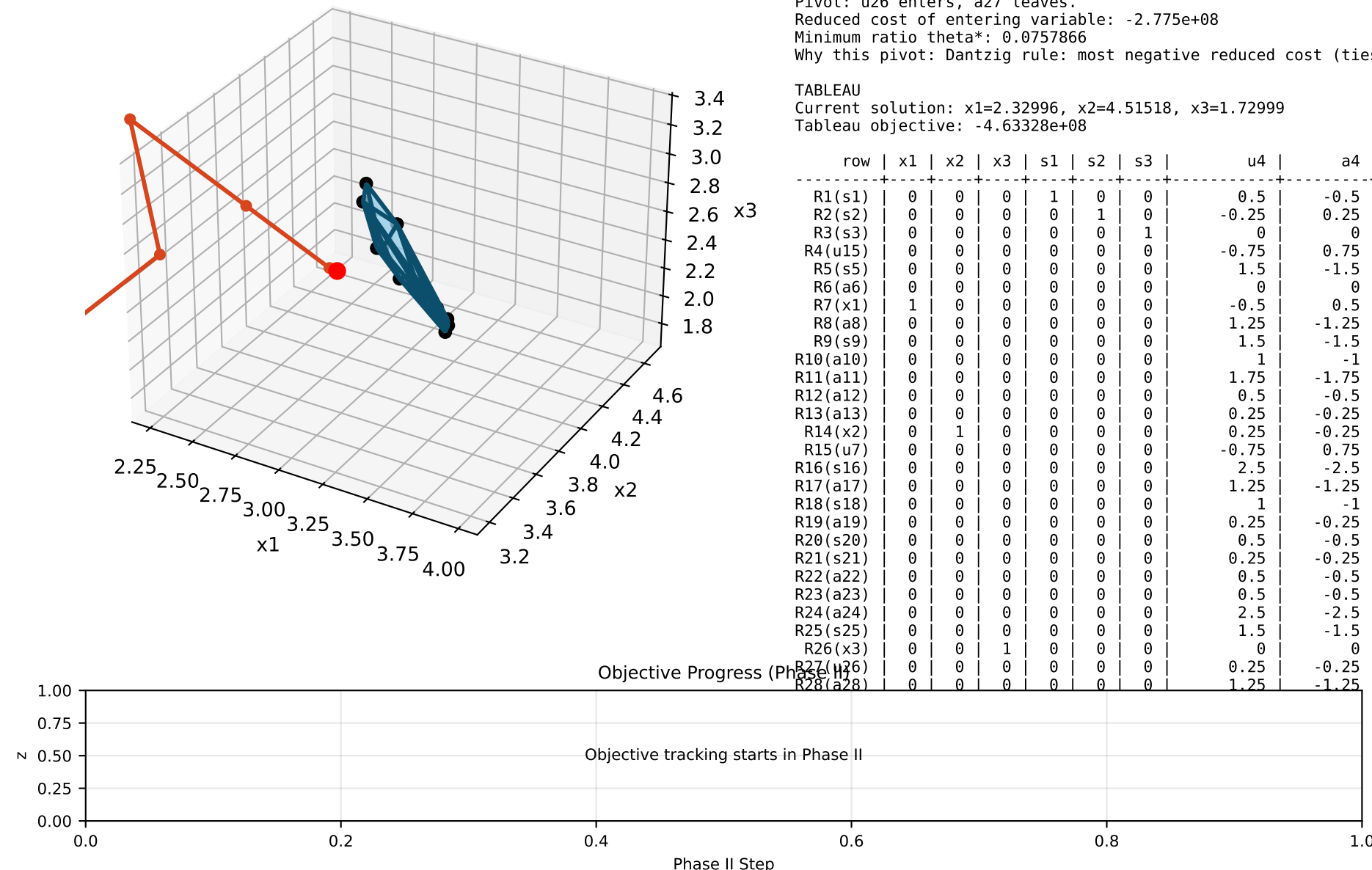
	row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratic	
Phase 04	R1(s1)	0	0	0	1	0	0	0.53125	-0.53125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.67951	16.063		
	R2(s2)	0	0	0	0	1	0	-0.28125	0.28125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.47534	inf		
	R3(s3)	0	0	0	0	0	1	0.09375	-0.09375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.2984	96.2389		
	R4(u15)	0	0	0	0	0	0	-0.875	0.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.120281	0.120281	
	R5(s5)	0	0	0	0	0	0	2.15625	-2.15625	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.14176	3.42418		
	R6(a6)	0	0	0	0	0	0	0.1875	-0.1875	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.440344	2.17522		
	R7(x1)	1	0	0	0	0	0	-0.53125	0.53125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.32049	inf	
	R8(a8)	0	0	0	0	0	0	1.53125	-1.53125	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.37945	1.47997	
	R9(s9)	0	0	0	0	0	0	1.8125	-1.8125	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.51391	2.29941	
	R10(a10)	0	0	0	0	0	0	1.625	-1.625	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.28331	2.96514	
	R11(a11)	0	0	0	0	0	0	2.25	-2.25	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.31183	2.18599
	R12(a12)	0	0	0	0	0	0	1.0625	-1.0625	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.09427	3.49203	
	R13(a13)	0	0	0	0	0	0	0.4375	-0.4375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	-1	0	-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.964335	2.04895	
	R14(x2)	0	1	0	0	0	0	0.28125	-0.28125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.52466	14.197	
	R15(u7)	0	0	0	0	0	0	-0.78125	0.78125	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	-0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.39532	inf	
	R16(s16)	0	0	0	0	0	0	2.9375	-2.9375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.5386	2.96157
	R17(a17)	0	0	0	0	0	0	1.875	-1.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.49536	2.21812
	R18(s18)	0	0	0	0	0	0	1.6875	-1.6875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.56304	5.0789	
	R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0571818	0.320417		
	R20(s20)	0	0	0	0	0	0	0.53125	-0.53125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.45857	5.81675	
	R21(s21)	0	0	0	0	0	0	-0.21875	0.21875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.24497	9.10015	
	R22(a22)	0	0	0	0	0	0	0.71875	-0.71875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.375	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	1.16547	1.53912	
	R23(a23)	0	0	0	0	0	0	0.84375	-0.84375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.125	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	1.63438	1.81552	
	R24(a24)	0	0	0	0	0	0	2.9375	-2.9375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	3.86471	1.27147	
	R25(s25)	0	0	0	0	0	0	1.96875	-1.96875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	8.72816	3.99947	
	R26(x3)	0	0	1	0	0	0	-0.09375	0.09375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.70157	inf
	R27(a27)	0	0	0	0	0	0	0.28125	-0.28125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.08526	0.385534
	R28(a28)	0	0	0	0	0	0	1.625	-1.625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.51465	1.47432





Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 7/31 | BIG-M step 6 | ENTER: u26 | LEAVE: a27

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u26 enters, a27 leaves.

Reduced cost of entering variable: -2.775e+08

Minimum ratio theta\*: 0.0757866

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=2.32996, x2=4.51518, x3=1.72999

Tableau objective: -4.63328e+08

	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio				
R1(s1)	0	0	0	1	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.444444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.67004	77.4361				
R2(s2)	0	0	0	0	1	0	-0.25	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.444444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.48482	inf				
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.333333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.27	27.4625				
R4(u15)	0	0	0	0	0	0	-0.75	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.222222	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.158174	inf				
R5(s5)	0	0	0	0	0	0	1.5	-1.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.94282	3.10162				
R6(a6)	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.383504	0.587126				
R7(x1)	1	0	0	0	0	0	-0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.444444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.32996	inf				
R8(a8)	0	0	0	0	0	0	1.25	-1.25	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.29419	2.11506					
R9(s9)	0	0	0	0	0	0	1.5	-1.5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1.44444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.41917	3.61113			
R10(a10)	0	0	0	0	0	0	1	-1	0	0	0	0	-1	1	0	0	-1	1	0	0	0	0	0	0	1.88889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.09385	2.11333				
R11(a11)	0	0	0	0	0	0	1.75	-1.75	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	2.11111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.16026	2.65592			
R12(a12)	0	0	0	0	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.92375	1.81968					
R13(a13)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	-0.333333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.666667	-0.666667	0	0	0.907495	1.28578
R14(x2)	0	1	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.444444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.51518	36.1973			
R15(u7)	0	0	0	0	0	0	-0.75	0.75	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	-0.444444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4048	inf			
R16(s16)	0	0	0	0	0	0	2.5	-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.22222	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.40597	5.45063		
R17(a17)	0	0	0	0	0	0	1.25	-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.88889	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.3059	1.79815			
R18(s18)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.77778	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.35463	3.47747				
R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0571818	inf						
R20(s20)	0	0	0	0	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.555556	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4491	27.6686			
R21(s21)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.444444	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2.25444	inf			
R22(a22)	0	0	0	0	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.111111	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	1.09916	1.33197		
R23(a23)	0	0	0	0	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.888889	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	1.53018	1.18864			
R24(a24)	0	0	0	0	0	0	2.5	-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.22222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	3.73209	2.20841		
R25(s25)	0	0	0	0	0	0	1.5	-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.66667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.58606	4.65502		
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.333333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.72999	inf		
R27(u26)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.555556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0757866	0.0757866			
R28(a28)	0	0	0	0	0	0	1.25	-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.33333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.40097	1.67643	
base (u)										1.5e+07	0	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	-2.36667e+08	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	-2.31667e+08	2.46667e+08	1.5e+07	0	-4.63328e+08				

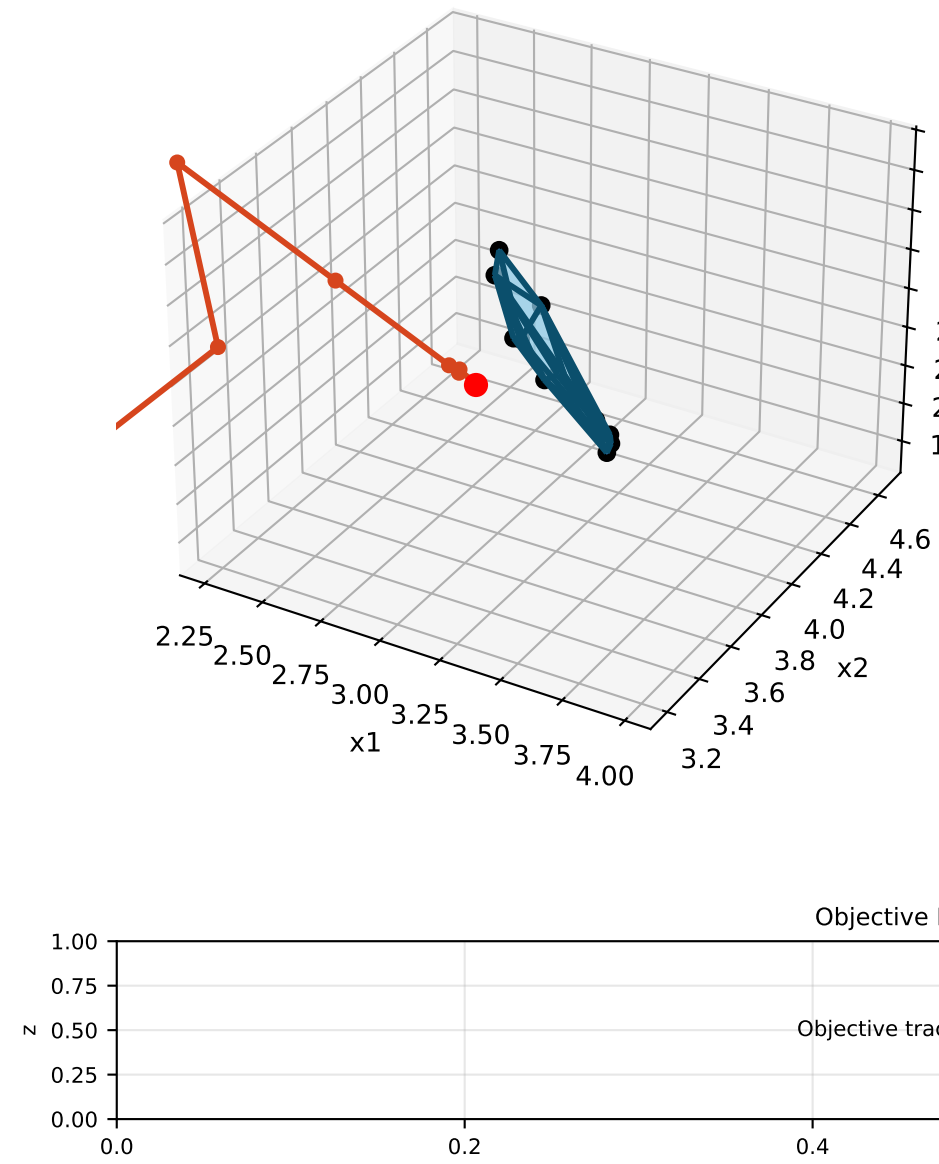
Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 8/31 | BIG-M step 7 | ENTER: s14 | LEAVE: a6

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: s14 enters, a6 leaves.

Reduced cost of entering variable: -2.36667e+08

Minimum ratio theta\*: 0.575257

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=2.58563, x2=4.25952, x3=1.92175

Tableau objective: -3.27184e+08

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio																																																																																																		
R1(s1)	0	0	0	1	0	0	0.5	-0.5	0	0.666667	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.41437	21.7576																																																																																																			
R2(s2)	0	0	0	0	1	0	-0.25	0.25	0	-0.666667	0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.74048	inf																																																																																																			
R3(s3)	0	0	0	0	0	1	0	0	0	0.5	-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.0783	30.81																																																																																																	
R4(u15)	0	0	0	0	0	0	-0.75	0.75	0	0.333333	-0.333333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0303394	0.711784																																																																																																			
R5(s5)	0	0	0	0	0	0	1.5	-1.5	1	5	-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.02529	2.38284																																																																																																	
R6(s14)	0	0	0	0	0	0	0	0	0	-1.5	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.575257	0.575257																																																																																																	
R7(x1)	1	0	0	0	0	0	-0.5	0.5	0	-0.666667	0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.58563	inf																																																																																																			
R8(a8)	0	0	0	0	0	0	1.25	-1.25	0	1.5	-1.5	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.71893	2.29419																																																																																																		
R9(s9)	0	0	0	0	0	0	1.5	-1.5	0	2.16667	-2.16667	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.333333	0.333333	3.58825	3.05943																																																																																																
R10(a10)	0	0	0	0	0	0	1	-1	0	2.83333	-2.83333	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.00725	2.69674																																																																																																		
R11(a11)	0	0	0	0	0	0	1.75	-1.75	0	3.16667	-3.16667	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.94583	2.44433																																																																																																			
R12(a12)	0	0	0	0	0	0	0.5	-0.5	0	3	-3	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.77324	1.96187																																																																																																	
R13(a13)	0	0	0	0	0	0	0.25	-0.25	0	-0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.09925	inf																																																																																																		
R14(x2)	0	1	0	0	0	0	0.25	-0.25	0	0.666667	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.25952	10.1592																																																																																																			
R15(u7)	0	0	0	0	0	0	-0.75	0.75	0	-0.666667	0.666667	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.66047	inf																																																																																																			
R16(s16)	0	0	0	0	0	0	2.5	-2.5	0	4.83333	-4.83333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.66667	1.66667	7.55237	2.9191																																																																																																
R17(a17)	0	0	0	0	0	0	1.25	-1.25	0	4.33333	-4.33333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.666667	0.666667	2.64405	1.4905																																																																																																
R18(s18)	0	0	0	0	0	0	1	-1	0	4.16667	-4.16667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7567	3.36767																																																																																																		
R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0571818	inf																																																																																																		
R20(s20)	0	0	0	0	0	0	0.5	-0.5	0	-0.833333	0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3.76869	inf																																																																																																			
R21(s21)	0	0	0	0	0	0	0.25	-0.25	0	-0.666667	0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.51011	inf																																																																																																			
R22(a22)	0	0	0	0	0	0	0.5	-0.5	0	0.166667	-0.166667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.666667	-0.666667	1.03524	9.89243																																																																																																
R23(a23)	0	0	0	0	0	0	0.5	-0.5	0	1.33333	-1.33333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.333333	-0.333333	1.01884	1.72145																																																																																																
R24(a24)	0	0	0	0	0	0	2.5	-2.5	0	4.83333	-4.83333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.66667	1.66667	1.87848	1.15823																																																																																																
R25(s25)	0	0	0	0	0	0	1.5	-1.5	0	2.5	-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.6273	5.15164																																																																																																	
R26(x3)	0	0	0	1	0	0	0	0	0	-0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.92175	inf																																																																																																	
R27(u26)	0	0	0	0	0	0	0.25	-0.25	0	-0.833333	0.833333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.395374	inf																																																																																																		
R28(a28)	0	0	0	0	0	0	1.25	-1.25	0	2	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.63396	1.80073																																																																																																	
5e+07																																																																																																																																																				

Objective Progress (Phase II)

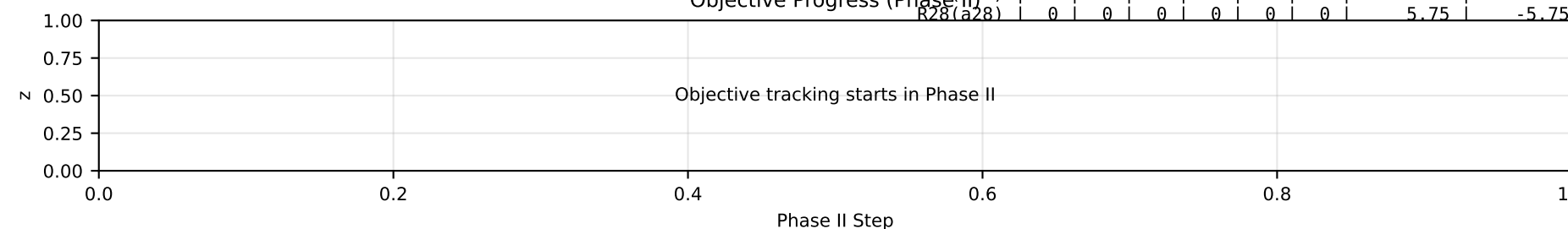
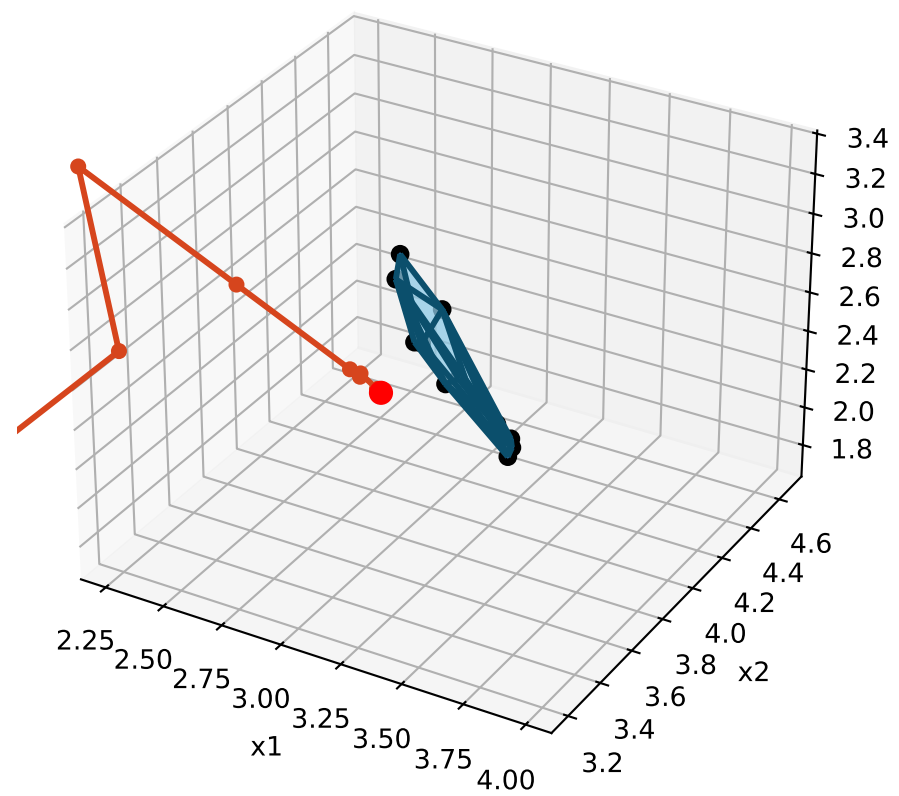
Objective tracking starts in Phase II

Phase II Step



## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 9/31 | BIG-M step 8 | ENTER: u6 | LEAVE: u1

COMMENTS

Teaching Mode | Rule: DANTZIC

Pivot: u6 enters, u15 leaves

Reduced cost of entering variable: -3.4e+0

Minimum ratio theta\*: 0.091018

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

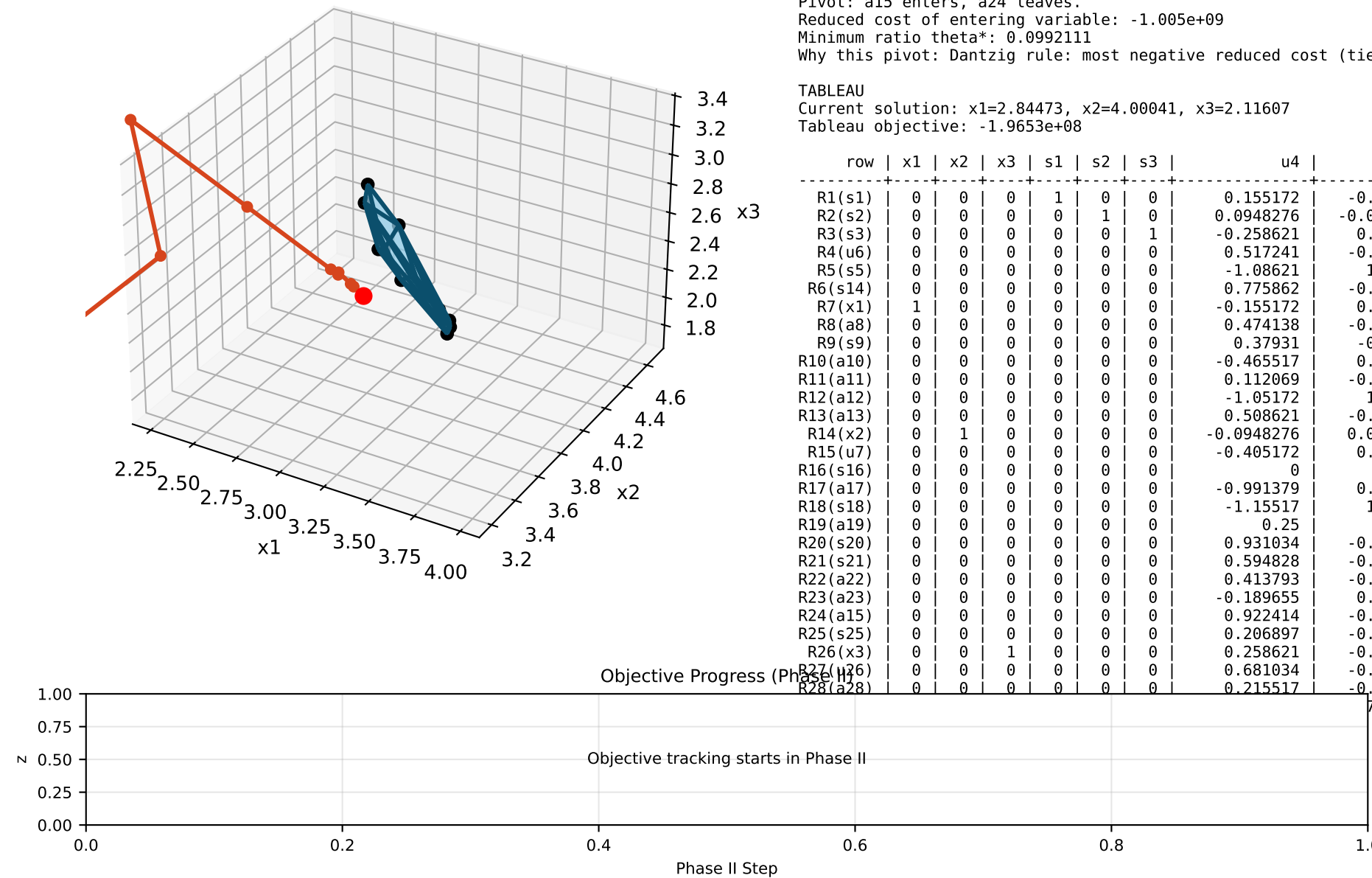
Current solution:  $x_1=2.64631$ ,  $x_2=4.19884$ ,  $x_3=1.96725$

Tableau objective: -2.96237e+08

[illegible]

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 10/31 | BIG-M step 9 | ENTER: a15 | LEAVE: a24

COMMENTS  
Teaching Mode | Rule: DANTZIG  
Pivot: a15 enters, a24 leaves.  
Reduced cost of entering variable: -1.005e+09  
Minimum ratio theta\*: 0.0992111  
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=2.84473, x2=4.00041, x3=2.11607  
Tableau objective: -1.9653e+08

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio	
R1(s1)	0	0	0	1	0	0	0.155172	-0.155172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.137931	-0.137931	0	0	0	0	-0.103448	0.103448	0	0	9.15527	4.67685
R2(s2)	0	0	0	0	1	0	0.0948276	-0.0948276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.99959	inf		
R3(s3)	0	0	0	0	0	1	-0.258621	0.258621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.88393	6.6885		
R4(u6)	0	0	0	0	0	0	0.517241	-0.517241	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.388652	inf		
R5(s5)	0	0	0	0	0	0	-1.08621	1.08621	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.08204	0.371347		
R6(s14)	0	0	0	0	0	0	0.775862	-0.775862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.15823	inf		
R7(x1)	1	0	0	0	0	0	-0.155172	0.155172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.84473	inf		
R8(a8)	0	0	0	0	0	0	0.474138	-0.474138	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.13595	0.351645		
R9(s9)	0	0	0	0	0	0	0.37931	-0.37931	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.74617	0.521699		
R10(a10)	0	0	0	0	0	0	-0.465517	0.465517	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.90607	0.441102		
R11(a11)	0	0	0	0	0	0	0.112069	-0.112069	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7151	0.385011		
R12(a12)	0	0	0	0	0	0	-1.05172	1.05172	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.60728	0.277798		
R13(a13)	0	0	0	0	0	0	0.508621	-0.508621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.29357	inf		
R14(x2)	0	1	0	0	0	0	-0.0948276	0.0948276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.00041	2.09942		
R15(u7)	0	0	0	0	0	0	-0.405172	0.405172	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.91957	inf		
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	0.490514
R17(a17)	0	0	0	0	0	0	-0.991379	0.991379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95989	0.173049		
R18(s18)	0	0	0	0	0	0	-1.15517	1.15517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.13732	0.590196		
R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0571818	inf	
R20(s20)	0	0	0	0	0	0	0.931034	-0.931034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.09256	inf		
R21(s21)	0	0	0	0	0	0	0.594828	-0.594828	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.76921	inf		
R22(a22)	0	0	0	0	0	0	0.413793	-0.413793	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																												

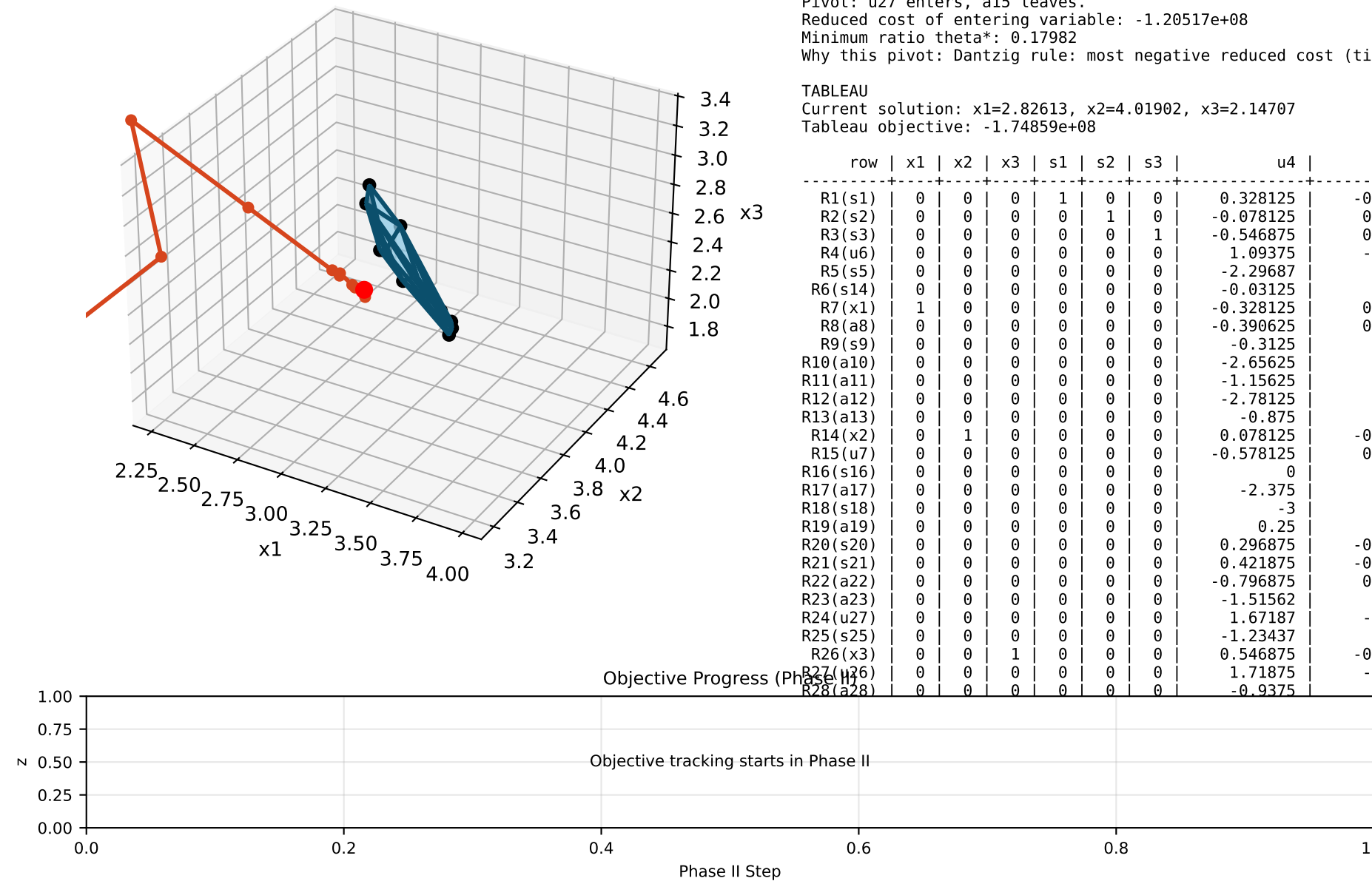
Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 11/31 | BIG-M step 10 | ENTER: u27 | LEAVE: a15

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u27 enters, a15 leaves.

Reduced cost of entering variable: -1.20517e+08

Minimum ratio theta\*: 0.17982

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=2.82613, x2=4.01902, x3=2.14707

Tableau objective: -1.74859e+08

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio	
R1(s1)	0	0	0	1	0	0	0.328125	-0.328125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.1875	0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.17387	inf	
R2(s2)	0	0	0	0	1	0	-0.078125	0.078125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1875	-0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.98098	77.3293
R3(s3)	0	0	0	0	0	1	-0.546875	0.546875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3125	-0.3125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.85293	57.3268	
R4(u6)	0	0	0	0	0	0	1.09375	-1.09375	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.625	0.625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.450659	inf	
R5(s5)	0	0	0	0	0	0	-2.29687	2.29687	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3125	-1.3125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.95182	5.6371	
R6(s14)	0	0	0	0	0	0	-0.03125	0.03125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.875	-0.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.07142	2.3992	
R7(x1)	1	0	0	0	0	0	-0.328125	0.328125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1875	-0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.82613	27.4991	
R8(a8)	0	0	0	0	0	0	-0.390625	0.390625	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0.9375	-0.9375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.04294	2.19618	
R9(s9)	0	0	0	0	0	0	-0.3125	0.3125	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.75	-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.67176	6.63658
R10(a10)	0	0	0	0	0	0	-2.65625	2.65625	0	0	0	0	0	0	-1	1	0	-1	1	0	0	0	0	0	0	2.375	-2.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.67045	2.21779
R11(a11)	0	0	0	0	0	0	-1.15625	1.15625	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	1.375	-1.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.57868	3.579
R12(a12)	0	0	0	0	0	0	-2.78125	2.78125	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	1.875	-1.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.42126	1.55371
R13(a13)	0	0	0	0	0	0	-0.875	0.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	1.5	-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.14476	1.56307
R14(x2)	0	1	0	0	0	0	0.078125	-0.078125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.1875	0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.01902	inf	
R15(u7)	0	0	0	0	0	0	-0.578125	0.578125	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0.1875	-0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.90097	18.5558
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf	
R17(a17)	0	0	0	0	0	0	-2.375	2.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	-1.5	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.811072	1.15987
R18(s18)	0	0	0	0	0	0	-3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	-2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.93889	5.56194	
R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0571818	inf		
R20(s20)	0	0	0	0	0	0	0.296875	-0.296875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6875	-0.6875	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.02435	10.7895
R21(s21)	0	0	0	0	0	0	0.421875	-0.421875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1875	-0.1875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.75061	26.7691
R22(a22)	0	0	0	0	0	0	-0.796875	0.796875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3125	-1.3125	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0.840251	1.34017	
R23(a23)	0	0	0	0	0	0	-1.51562	1.51562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4375	-1.4375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.358018	0.631234	
R24(u27)	0	0	0	0	0	0	1.67187	-1.67187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.8125	1.8125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0.17982	0.17982	
R25(s25)	0	0	0	0	0	0	-1.23437	1.23437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5625	-1.5625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.50066	7.72058
R26(x3)	0	0	1	0	0	0	-0.546875	0.546875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.3125	0.3125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.14707	inf
R27(u26)	0	0	0	0	0	0	1.71875	-1.71875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.125	1.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.830862	inf	
R28(a28)	0	0	0	0	0	0	-0.9375	0.9375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25	-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.732642	1.24215
base III							516e+08		0	0	1.5e+07	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	-2.03438e+08	2.18438e+08	0	1.5e+07	0	0	1.5e+07	0	0	0	1.5e+07	0	1.5e+07	0	-6.9375e+07	8.4375e+07	0	0	1.5e+07	0	1.5e+07	1.5e+07	0	-1.74859e+08		

Objective Progress (Phase II)

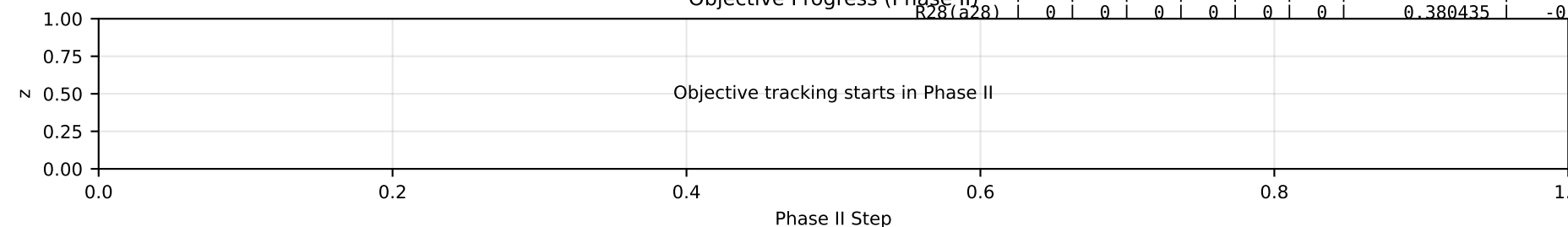
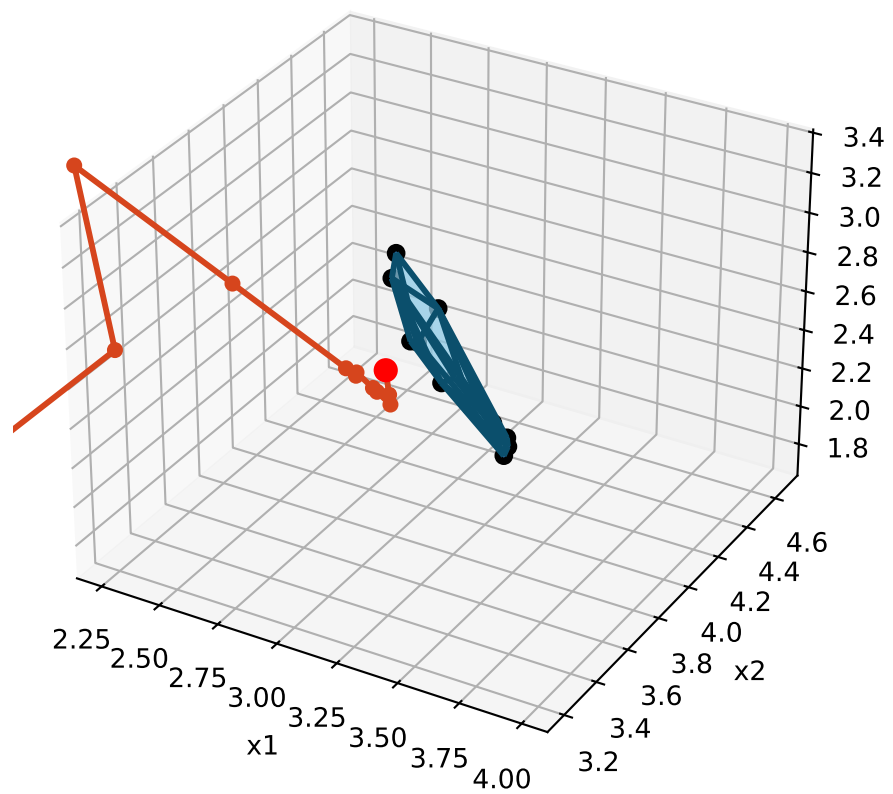
Objective tracking starts in Phase II

Phase II Step



## Two-Phase Simplex Report

## Feasible polytope + extreme points + simplex path



State 12/31 | BIG-M step 11 | ENTER: u15 | LEAVE: a2

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u15 enters, a23 leaves.

Reduced cost of entering variable: -2.03438e+0

Minimum ratio theta\*: 0.249056

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=2.77943$ ,  $x_2=4.06571$ ,  $x_3=2.224$

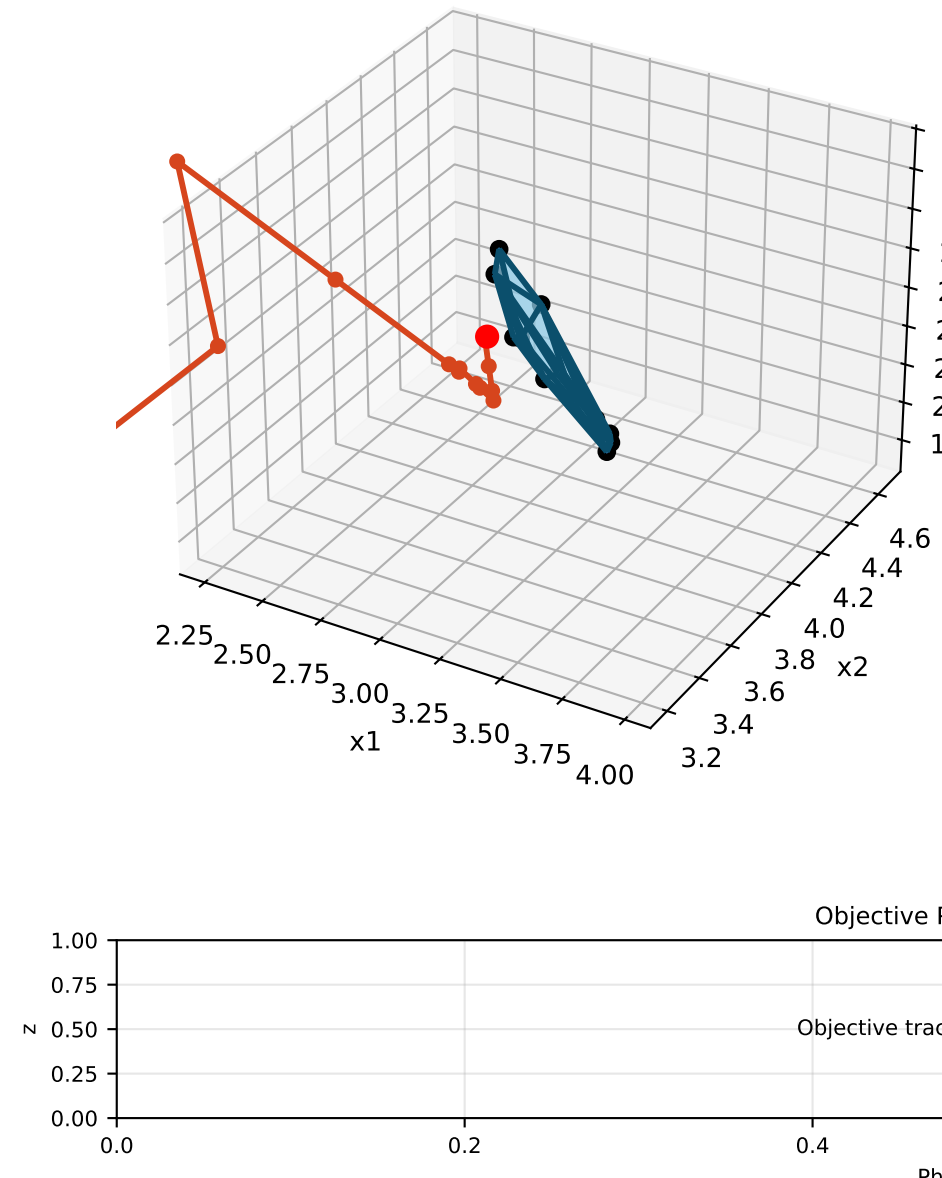
Tableau objective: -1.24191e+0

	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio	
R1(s1)	0	0	0	1	0	0	0.130435	-0.130435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.130435	0.130435	0.173913	-0.173913	0	0	0	0	0	0	9.22057	inf			
R2(s2)	0	0	0	0	1	0	0.119565	-0.119565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.130435	-0.130435	-0.173913	0.173913	0	0	0	0	0	0	7.93429	42.5652			
R3(s3)	0	0	0	0	0	1	-0.217391	0.217391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.217391	0.0434783	-0.0434783	0	0	0	0	0	0	9.7751	31.5294				
R4(u6)	0	0	0	0	0	0	0.434783	-0.434783	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.434783	0.434783	-0.0869565	0.0869565	0	0	0	0	0	0	0.606319	inf			
R5(s5)	0	0	0	0	0	0	-0.913043	0.913043	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.913043	-0.913043	0.782609	-0.782609	0	0	0	0	0	0	3.62494	3.01091			
R6(s14)	0	0	0	0	0	0	0.891304	-0.891304	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.608696	-0.608696	-0.478261	0.478261	0	0	0	0	0	0	0.8535	1.22448			
R7(x1)	1	0	0	0	0	0	-0.130435	0.130435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.130435	-0.130435	-0.173913	0.173913	0	0	0	0	0	0	2.77943	15.0727			
R8(a8)	0	0	0	0	0	0	0.597826	-0.597826	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.597826	0.521739	-0.130435	-0.130435	0	0	0	0	0	0	0.809453	1.11247			
R9(s9)	0	0	0	0	0	0	0.478261	-0.478261	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.478261	-0.478261	0.304348	-0.304348	0	0	0	0	0	0	2.48497	3.56235			
R10(a10)	0	0	0	0	0	0	-0.152174	0.152174	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.152174	0.152174	-0.130435	-0.130435	0	0	0	0	0	0	2.07894	1.1244		
R11(a11)	0	0	0	0	0	0	0.293478	-0.293478	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.293478	-0.293478	0.391304	-0.391304	0	0	0	0	0	0	2.23623	1.87541			
R12(a12)	0	0	0	0	0	0	-0.804348	0.804348	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.804348	0.804348	0.26087	-0.26087	0	0	0	0	0	0	0.954281	0.758006		
R13(a13)	0	0	0	0	0	0	0.706522	-0.706522	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.706522	-0.706522	-0.391304	0.391304	0	0	0	0	0	0	0.776172	0.763171		
R14(x2)	0	1	0	0	0	0	-0.119565	0.119565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.119565	0.119565	0.173913	-0.173913	0	0	0	0	0	0	4.06571	inf			
R15(u7)	0	0	0	0	0	0	-0.380435	0.380435	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.380435	0.380435	-0.173913	0.173913	0	0	0	0	0	0	1.85427	10.1385		
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	5.67389	inf			
R17(a17)	0	0	0	0	0	0	-0.793478	0.793478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	-0.793478	0.793478	0.608696	-0.608696	0	0	0	0	0	0	0.437488	0.540715		
R18(s18)	0	0	0	0	0	0	-0.891304	0.891304	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.891304	0.891304	0.478261	-0.478261	0	0	0	0	0	0	5.44078	2.96945		
R19(a19)	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0.0571818	inf		
R20(s20)	0	0	0	0	0	0	1.02174	-1.02174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.02174	-1.02174	-0.304348	0.304348	0	0	0	0	0	0	3.85313	5.85361			
R21(s21)	0	0	0	0	0	0	0.619565	-0.619565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.619565	-0.619565	-0.173913	0.173913	0	0	0	0	0	0	2.70391	14.6699			
R22(a22)	0	0	0	0	0	0	0.586957	-0.586957	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.586957	-0.586957	-0.913043	0.913043	-0.217391	0.217391	0	0	0	0	0	0	0.513365	0.640192	
R23(u15)	0	0	0	0	0	0	-1.05435	1.05435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	-1.05435	1.05435	0.26087	-0.26087	0	0	0	0	0	0	0.249056	0.249056		
R24(u27)	0	0	0	0	0	0	0.23913	-0.23913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.23913	-0.23913	0.347826	-0.347826	0	0	0	1	-1	0	0.631234	inf			
R25(s25)	0	0	0	0	0	0	0.413043	-0.413043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.413043	-0.413043	0.217391	-0.217391	1	0	0	0	0	0	6.11151	4.16042			
R26(x3)	0	0	1	0	0	0	0.217391	-0.217391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.217391	-0.217391	-0.0434783	0.0434783	0	0	0	0	0	0	2.2249	inf			
R27(u26)	0	0	0	0	0	0	0.532609	-0.532609	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.532609	-0.532609	0.0434783	-0.0434783	0	1	-1	0	0	0	1.11105	inf			
R28(a28)	0	0	0	0	0	0	0.380435	-0.380435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.380435	-0.380435	0.782609	-0.782609	0	0	0	0	0	0	0.869565	0.869565			
base u1	0	0	0	0	0	0	1.5e+07	-1.5e+07	0	0	1.5e+07	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	0	0	1.5e+07	-1.5e+07	1.5e+07	-1.5e+07	0	0	1.5e+07	0	1.5e+07	1.5e+07	0	1.5e+07	1.5e+07	0	-1.24191e+08	0.586113



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 14/31 | BIG-M step 13 | ENTER: u4 | LEAVE: a28

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u4 enters, a28 leaves.

Reduced cost of entering variable: -1.12188e+08

Minimum ratio theta\*: 0.0544785

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=2.72645$ ,  $x_2=4.13232$ ,  $x_3=2.31321$

Tableau objective: -6.50342e+07

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio				
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.15	0.15	0	0	0	0	0	0	0	0	0	0.26	-0.26	0	0	0	0	0	0.03	-0.03	9.27355	296.808			
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.05	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.21	-0.21	7.86768	36.021					
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.05	0.05	9.68679	inf					
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.1	-0.1	0.78293	7.57061				
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.05	-1.05	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.21	0.21	3.25405	inf						
R6(s14)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	-1.3	0.524526	0.441821					
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.15	-0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.03	0.03	2.72645	inf					
R8(a8)	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.25	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.05	-1.05	0.476438	0.490079					
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.84	-0.84	2.21856	2.58997					
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0.7	-0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.06	-1.06	1.3261	1.25547					
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0.1	-0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.98	-0.98	1.77959	1.79775					
R12(a12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	1.1	-1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	-0.18	0.397206	2.17291					
R13(a13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	-0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.44	-1.44	0.251967	0.222456					
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.21	0.21	4.13232	inf					
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.35	-0.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.27	0.27	1.8149	inf					
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf				
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.35	0.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.73	0.73	0.460686	inf					
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	-1.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.16	-0.16	4.84838	29.1448					
R19(a19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.2	0.2	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.24	-0.24	0.0435621	0.228727				
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.65	0.65	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1.33	-1.33	3.57714	2.63647			
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.45	0.45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.69	-0.69	2.61007	3.68588					
R22(a22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.15	0.15	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	1.23	-1.23	0.060763	0.101903					
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0.6	-0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.52	1.52	0.626972	inf			
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.25	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	-1.15	1.15	1.22513	inf
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.19	-1.19	5.58826	4.56266
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.25	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	2.31321	44.4681				
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.7	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.06	0.06	1.44257	inf
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	-0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.96	0.96	0.0544785	0.0544785
											0	1.5e+07	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	0	0	1.5e+07	0	-1.65e+07	3.15e+07	0	1.5e+07	0	0	0	0	1.5e+07	0	0	0	1.5e+07	2.16e+07	-6.6e+06	0	0	1.5e+07	0	1.5e+07	-9.27e+07	1.077e+08	-6.50342e+07	

Objective Progress (Phase II)

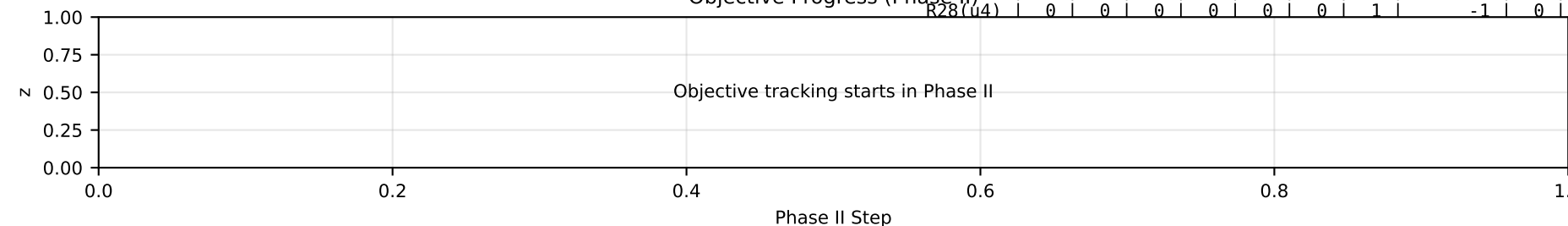
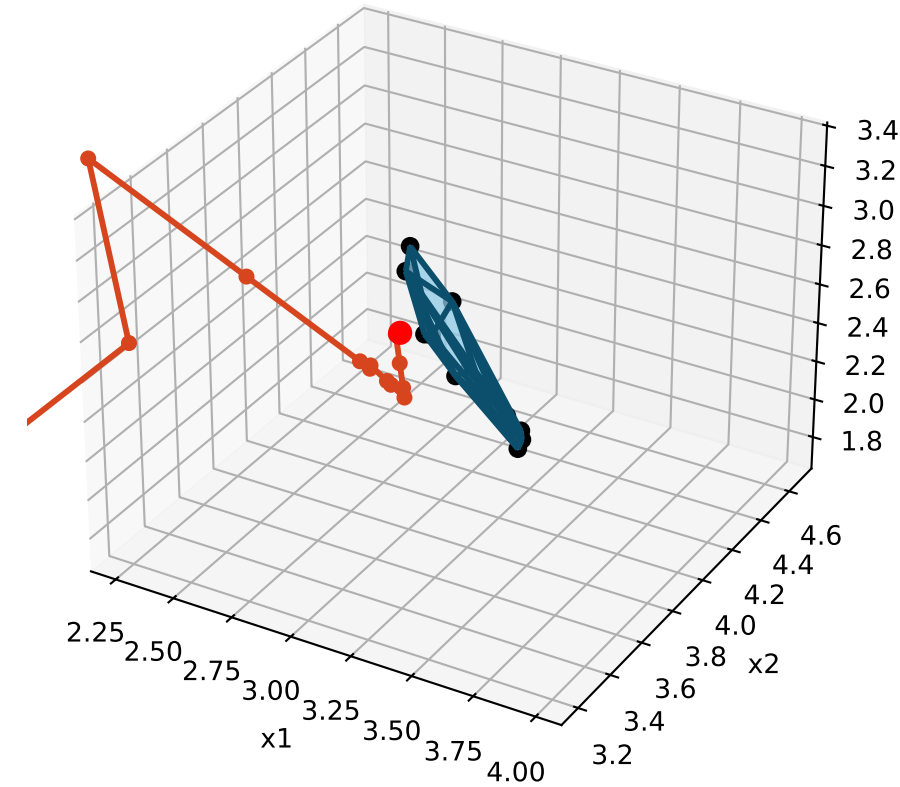
Objective tracking starts in Phase II

Phase II Step



## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 15/31 | BIG-M step 14 | ENTER: u28 | LEAVE: a2

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u28 enters, a22 leaves.  
Reduced cost of entering varia

Minimum ratio theta\*: 0.0494008

Why this pivot: Dantzig rule:

any time period, possibly after more negative feedback from (1999 to) smallest end?; Minimum value 1999 (1999 to) smallest low end?

TABLEAU

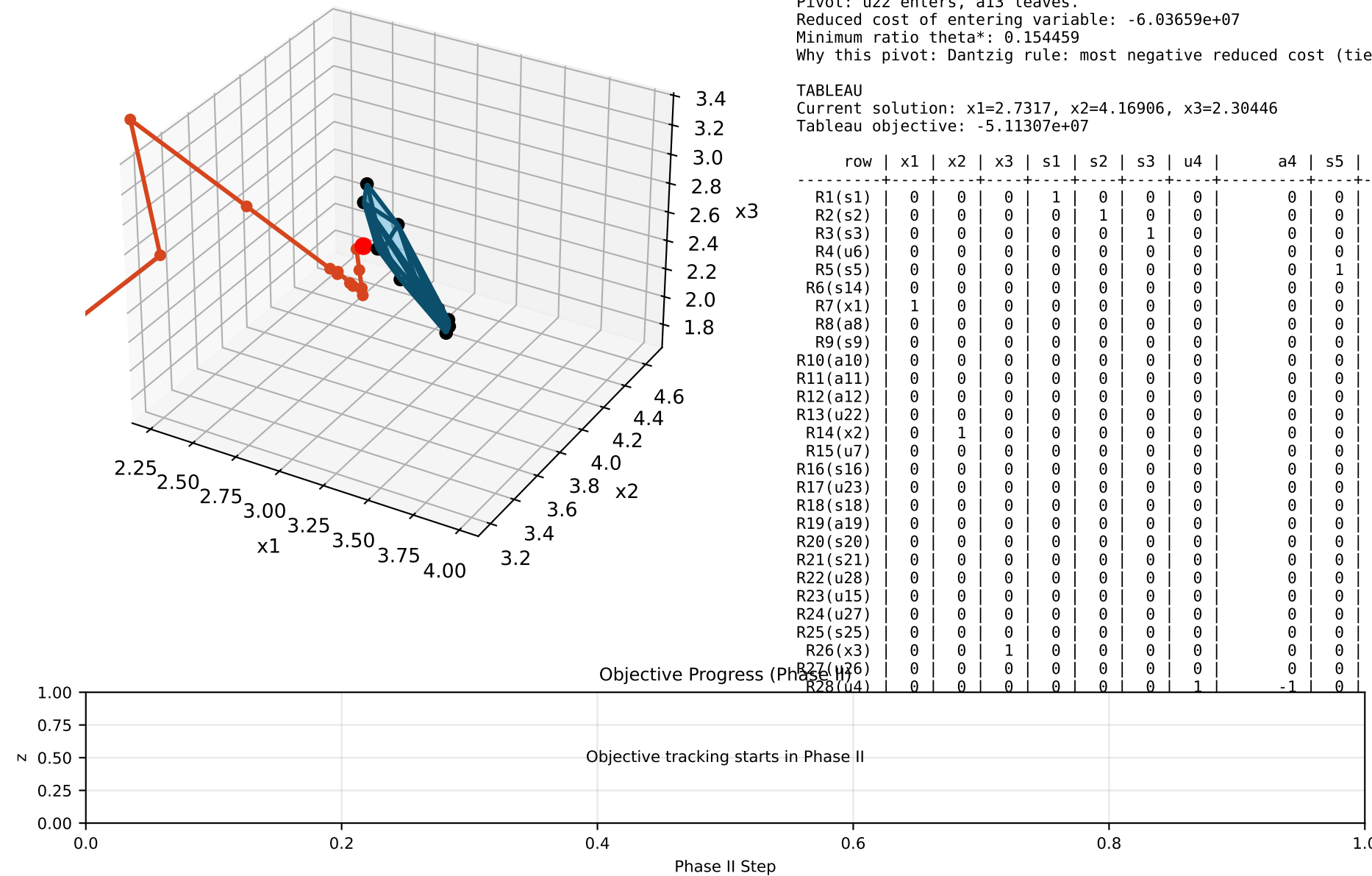
Current solution:  $x_1=2.72793$ ,  $x_2=4.14269$ ,  $x_3=2.3107$   
 Total objective: 6.04517e+07

tableau objective: -6.0454/e+0

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio			
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.146341	0.146341	0	0	0	0	0	0	0.0243902	-0.0243902	0	0	0.268293	-0.268293	0	0	0	0	0	0	0	0	9.27207	309.118
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0243902	0.0243902	0	0	0	0	0	0	0.170732	-0.170732	0	0	-0.121951	0.121951	0	0	0	0	0	0	0	0	7.85731	37.4652
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.243902	-0.243902	0	0	0	0	0	0	-0.0406504	0.0406504	0	0	-0.113821	0.113821	0	0	0	0	0	0	0	0	9.68926	inf
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.487805	0.487805	0	0	0	0	0	0	0.0813008	-0.0813008	0	0	0.227642	-0.227642	0	0	0	0	0	0	0	0	0.77799	7.8293
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.02439	-1.02439	0	0	0	0	0	0	-0.170732	0.170732	0	0	0.121951	-0.121951	0	0	0	0	0	0	0	0	3.26443	inf
R6(s14)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	-0.341463	0.341463	0	0	0	0	0	0	-0.105691	-1.05691	0	0	-0.0406504	0.0406504	0	0	0	0	0	0	0	0	0.460305	0.403481
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.146341	-0.146341	0	0	0	0	0	0	-0.0243902	0.0243902	0	0	-0.268293	0.268293	0	0	0	0	0	0	0	0	2.72793	inf
R8(a8)	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.121951	0.121951	0	0	0	0	0	0	0.853659	-0.853659	0	0	0.390244	-0.390244	0	0	0	0	0	0	0	0	0.424567	0.45375
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.097561	0.097561	0	0	0	0	0	0	0.682927	-0.682927	0	0	0.512195	-0.512195	0	0	0	0	0	0	0	0	2.17706	2.64114
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0	0	0.829268	-0.829268	0	0	0	0	0	0	0.861789	-0.861789	0	0	-0.186992	0.186992	0	0	0	0	0	0	0	0	1.27373	1.25103
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	0	0	0.219512	-0.219512	0	0	0	0	0	0	-0.796748	-0.796748	0	0	-0.430894	-0.430894	0	0	0	0	0	0	0	0	1.73118	1.81591
R12(a12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0	1.12195	-1.12195	0	0	0	0	0	0	0.146341	-0.146341	0	0	-0.390244	0.390244	0	0	0	0	0	0	0	0	0.388314	2.2067
R13(a13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	-0.0243902	0.0243902	0	0	0	0	0	0	1.17073	-1.17073	0	0	-0.121951	0.121951	0	0	0	0	0	0	0	0	0.18083	0.174977
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0243902	-0.0243902	0	0	0	0	0	0	-0.170732	0.170732	0	0	0.121951	-0.121951	0	0	0	0	0	0	0	0	4.14269	inf
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.317073	-0.317073	0	0	0	0	0	0	-0.219512	0.219512	0	0	-0.414634	0.414634	0	0	0	0	0	0	0	0	1.82824	inf
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf			
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.439024	0.439024	1	-1	0	0	0	0	-0.593496	0.593496	1	-1	0.138211	-0.138211	0	0	0	0	0	0	0	0	0.496748	inf
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.21951	-1.21951	1	0	0	0	0	0	0.130081	-0.130081	0	0	-0.235772	0.235772	0	0	0	0	0	0	0	0	4.84048	30.3024
R19(a19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.170732	0.170732	-1	1	0	0	0	0	0.195122	-0.195122	0	0	-0.146341	-0.146341	0	0	0	0	0	0	0	0	0.0317059	0.181509
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.487805	0.487805	0	0	1	0	0	0	-1.0813	-1.0813	0	0	0.227642	-0.227642	0	0	0	0	0	0	0	0	3.51143	2.68958
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.365854	0.365854	0	0	0	1	0	0	-0.560976	-0.560976	0	0	0.170732	-0.170732	0	0	0	0	0	0	0	0	3.78271	0
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.121951	0.121951	0	0	0	0	0	0	-0.813008	0.813008	0	0	-0.276423	0.276423	0	0	0	0	0	1	-1	0.0494008	0.0494008	
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0.414634	-0.414634	0	0	0	0	0	0	-1.23577	1.23577	0	0	-0.260163	0.260163	0	0	0	0	0	0	0	0	0.702061	inf
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.390244	0.390244	0	0	0	0	0	0	-0.934959	0.934959	0	0	-0.382114	-0.382114	0	0	1	-1	0	0	0	0	1.28194	inf
R25(s25)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.195122	-0.195122	0	0	0	0	0	0	-0.96748	-0.96748	0	0	0.308943	-0.308943	1	0	0	0	0	0	0	0	5.52947	4.69602
R26(x3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.243902	0.243902	0	0	0	0	0	0	0.0406504	-0.0406504	0	0	-0.113821	-0.113821	0	0	0	0	0	0	0	0	2.31074	46.2642
R27(u26)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.707317	0.707317	0	0	0	0	0	0	-0.0487805	0.0487805	0	0	-0.463415	-0.463415	0	1	-1	0	0	0	0	0	1.44554	inf
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.682927	-0.682927	0	0	0	0	0	0	-0.780488	0.780488	0	0	-0.585366	0.585366	0	0	0	0	0	0	0	0	0.101903	inf
phase 11											0	1.5e+07	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	0	0	1.5e+07	0	-2.78049e+07	4.28049e+07	0	1.5e+07	0	1.5e+07	-4.02439e+06	1.90244e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	-6.04547e+07									

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 16/31 | BIG-M step 15 | ENTER: u22 | LEAVE: a13

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u22 enters, a13 leaves.

Reduced cost of entering variable: -6.03659e+07

Minimum ratio theta\*: 0.154459

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=2.7317, x2=4.16906, x3=2.30446

Tableau objective: -5.11307e+07

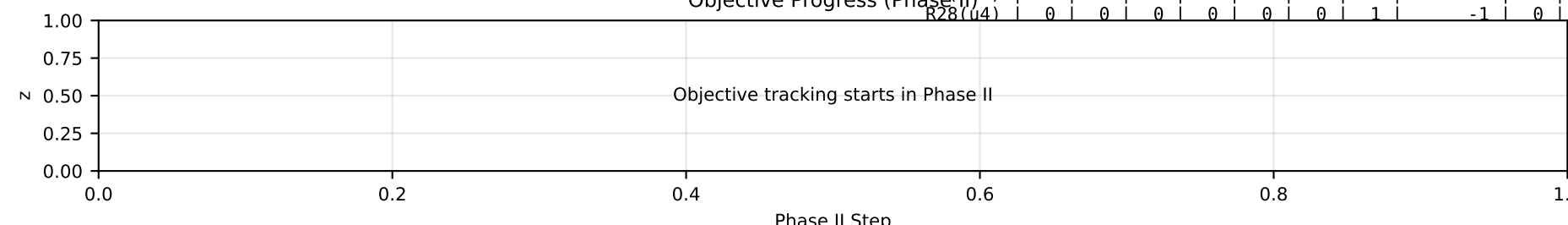
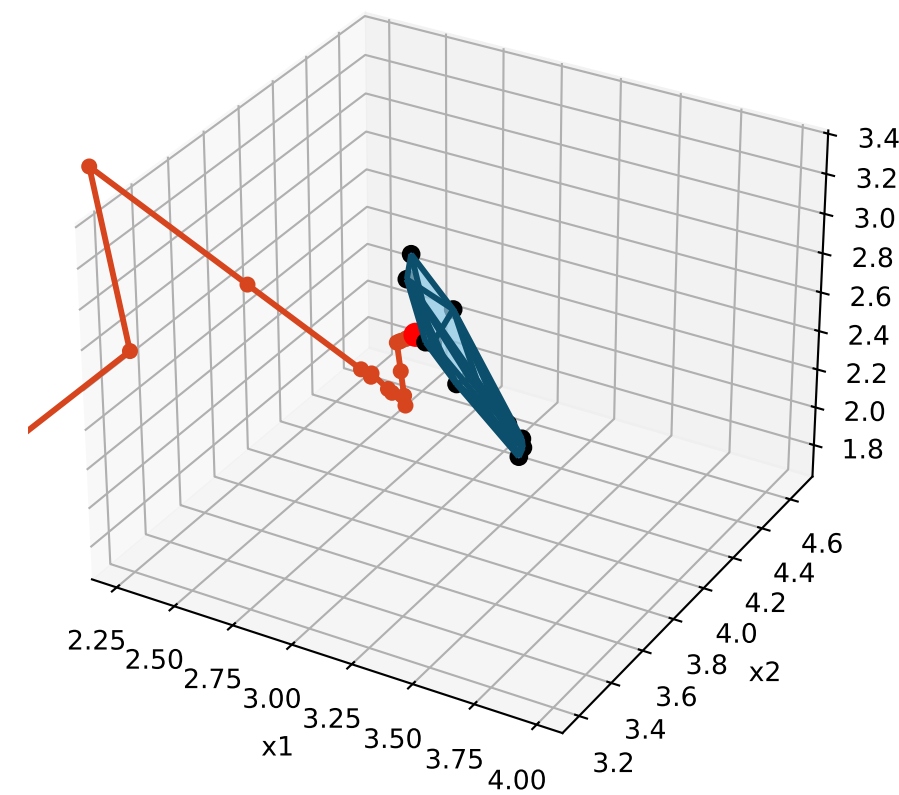
row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio	
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0208333	-0.0208333	0	0	0	0	0	0	-0.145833	0.145833	0	0	0	0	0	0	0	0	0	0.270833	-0.270833	0	0	0	0	0	0	0	9.2683	380.155
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.145833	-0.145833	0	0	0	0	0	0	-0.0208333	0.0208333	0	0	0	0	0	0	0	0	0	-0.104167	0.104167	0	0	0	0	0	0	0	7.83094	46.0214
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0347222	0.0347222	0	0	0	0	0	0	0.243056	-0.243056	0	0	0	0	0	0	0	0	0	-0.118056	0.118056	0	0	0	0	0	0	0	9.69554	inf
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0.0694444	-0.0694444	0	0	0	0	0	0	-0.486111	0.486111	0	0	0	0	0	0	0	0	0	0.236111	-0.236111	0	0	0	0	0	0	0.765433	9.56928	
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-0.145833	0.145833	0	0	0	0	0	0	1.02083	-1.02083	0	0	0	0	0	0	0	0	0	0.104167	-0.104167	0	0	0	0	0	0	3.2908	inf	
R6(s14)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.902778	-0.902778	1	0	0	0	0	0	-0.319444	0.319444	0	0	0	0	0	0	0	0	0	0.0694444	-0.0694444	0	0	0	0	0	0	0.297056	0.435519	
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0208333	0.0208333	0	0	0	0	0	0	0.145833	-0.145833	0	0	0	0	0	0	0	0	0	-0.270833	0.270833	0	0	0	0	0	0	2.7317	inf	
R8(a8)	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	0.729167	-0.729167	0	0	0	0	0	0	-0.104167	0.104167	0	0	0	0	0	0	0	0	0	0.479167	-0.479167	0	0	0	0	0	0	0.292712	0.49735	
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.583333	-0.583333	0	0	0	0	0	0	-0.0833333	0.0833333	0	0	0	0	0	0	0	0	0	0.583333	-0.583333	0	0	0	0	0	0	2.07158	3.18784	
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0.736111	-0.736111	0	0	0	0	0	0	0.847222	-0.847222	0	0	0	0	0	0	0	0	0	-0.0972222	0.0972222	0	0	0	0	0	0	1.14062	1.47801	
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0.680556	-0.680556	0	0	0	0	0	0	0.236111	-0.236111	0	0	0	0	0	0	0	0	0	0.513889	-0.513889	0	0	0	0	0	0	1.60811	2.1728	
R12(a12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0.125	-0.125	0	0	0	0	0	0	1.125	-1.125	0	0	0	0	0	0	0	0	0	-0.375	0.375	0	0	0	0	0	0	0.36571	2.65348	
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.854167	0.854167	0	0	0	0	0	0	-0.0208333	0.0208333	0	0	0	0	1	-1	0	0	0	-0.104167	0.104167	0	0	0	0	0	0	0.154459	0.154459	
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.145833	0.145833	0	0	0	0	0	0	0.0208333	-0.0208333	0	0	0	0	0	0	0	0	0	0.104167	-0.104167	0	0	0	0	0	0	4.16906	inf	
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	-0.1875	0.1875	0	0	0	0	0	0	0.3125	-0.3125	0	0	0	0	0	0	0	0	0	-0.4375	0.4375	0	0	0	0	0	0	1.86215	inf	
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf				
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.506944	0.506944	0	0	0	0	0	0	-0.451389	0.451389	0	0	0	0	0	0	1	-1	0.0763889	-0.0763889	0	0	0	0	0	0	0.588419	inf		
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.111111	-0.111111	0	0	0	0	0	0	1.22222	-1.22222	1	0	0	0	0	0	0	0	0	-0.222222	0.222222	0	0	0	0	0	0	4.82039	37.2112	
R19(a19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.166667	-0.166667	0	0	0	0	0	0	-0.166667	0.166667	0	-1	1	0	0	0	0	0	0	0	0.166667	-0.166667	0	0	0	0	0	0	0.00156767	0.162493
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.923611	-0.923611	0	0	0	0	0	0	-0.465278	0.465278	0	0	0	1	0	0	0	0	0	0.340278	-0.340278	0	0	0	0	0	0	3.34442	3.24742	
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.479167	-0.479167	0	0	0	0	0	0	-0.354167	0.354167	0	0	0	0	1	0	0	0	0	0.229167	-0.229167	0	0	0	0	0	0	2.48934	4.59197	
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.694444	0.694444	0	0	0	0	0	0	-0.138889	0.138889	0	0	0	0	0	0	0	0	0	-0.361111	0.361111	0	0	0	0	1	-1	0.174977	inf	
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.05556	1.05556	0	1	-1	0	0	0	0.388889	-0.388889	0	0	0	0	0	0	0	0	0	-0.388889	0.388889	0	0	0	0	0	0	0.892937	inf	
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.798611	0.798611	0	0	0	0	0	0	-0.409722	0.409722	0	0	0	0	0	0	0	0	0	0.284722	-0.284722	0	0	0	1	-1	0	0	1.42635	inf
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.826389	-0.826389	0	0	0	0	0	0	0.215278	-0.215278	0	0	0	0	0	0	0	0	0	0.409722	-0.409722	1	0	0	0	0	0	5.38004	5.71534	
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0347222	-0.0347222	0	0	0	0	0	0	-0.243056	0.243056	0	0	0	0	0	0	0	0	0	0.118056	-0.118056	0	0	0	0	0	0	2.30446	56.8442	
R27(u16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0416667	0.0416667	0	0	0	0	0	0	-0.708333	0.708333	0	0	0	0	0	0	0	0	0	0.458333	-0.458333	0	1	-1	0	0	0	1.45307	inf	
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.666667	0.666667	0	0	0	0	0	0	0.666667	-0.666667	0	0	0	0	0	0	0	0	0	-0.666667	0.666667	0	0	0	0	0	0	0.222456	inf	
											0	1.5e+07	0	1.5e+07	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	-3.65625e+07	5.15625e+07	0	0	1.5e+07	0	-2.90625e+07	4.40625e+07	0	1.5e+07	0	0	0	0	1.5e+07	0	1.5e+07	-1.03125e+07	2.53125e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	0	1.5e+07	-5.11307e+07	-





## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 18/31 | BIG-M step 17 | ENTER: u19 | LEAVE: s1

## COMMENTS

Teaching Mode | Rule: DANTZIO

Pivot: u19 enters, s14 leaves.

Reduced cost of entering variable: -2.04375e+0

Minimum ratio theta\*: 0.0532734

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

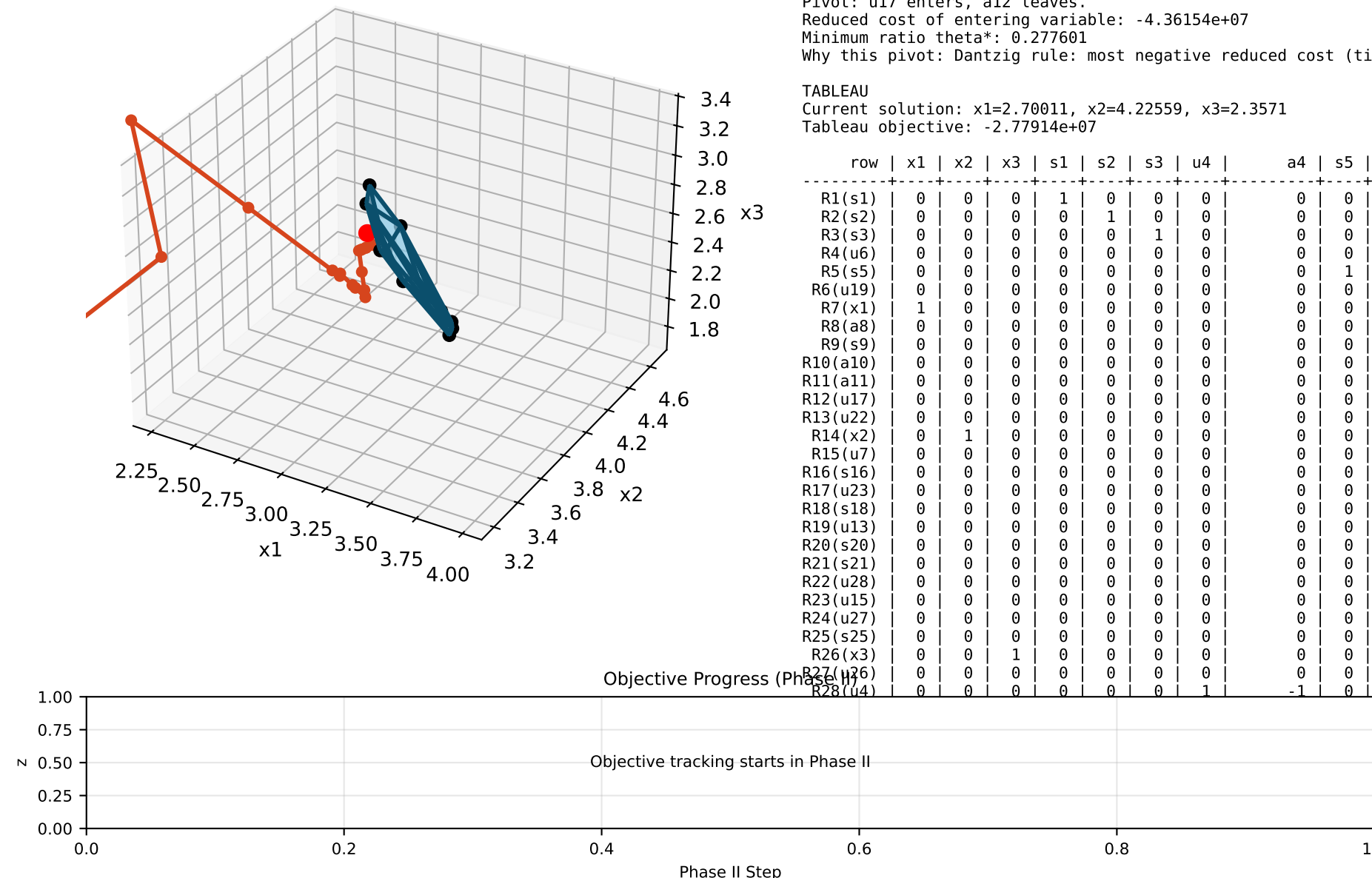
Current solution:  $x_1=2.73855$ ,  $x_2=4.21705$ ,  $x_3=2.2930$ .

Tableau objective: -3.98991e+07

[illegible]

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 19/31 | BIG-M step 18 | ENTER: u17 | LEAVE: a12

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u17 enters, a12 leaves.

Reduced cost of entering variable: -4.36154e+07

Minimum ratio theta\*: 0.277601

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=2.70011, x2=4.22559, x3=2.3571

Tableau objective: -2.77914e+07

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio		
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.118421	0.118421	0	0	-0.0394737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.223684	-0.223684	0	0	0	0	0	0	0	0	9.29989	
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0263158	-0.0263158	0	0	-0.157895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.105263	0.105263	0	0	0	0	0	0	0	0	7.77441	252.946
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.197368	-0.197368	0	0	0.0657895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0394737	0.0394737	0	0	0	0	0	0	0	0	9.6429	42.0635
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	-0.394737	0.394737	0	0	-0.131579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0789474	-0.0789474	0	0	0	0	0	0	0	0	0.870706	inf
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.828947	-0.828947	0	0	0.276316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.434211	-0.434211	0	0	0	0	0	0	0	0	3.06972	3.44478
R6(u19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0921053	-0.0921053	0	0	0.197368	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	-0.118421	0.118421	0	0	0	0	0	0	0	0	0.0233779	0.494682
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.118421	-0.118421	0	0	0.0394737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.70011	19.7784		
R8(a8)	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0.131579	-0.131579	0	0	-0.789474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0100743	0.343084		
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.105263	-0.105263	0	0	-0.631579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.84547	15.272	
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0.947368	-0.947368	0	0	-0.684211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.590909	0.81106	
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0.407895	-0.407895	0	0	-0.697368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.25178	2.90231	
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.855263	0.855263	0	0	-0.118421	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.277601	0.277601	
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.276316	0.276316	0	0	0.907895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.525206	inf	
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0263158	0.0263158	0	0	0.157895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.22559	inf	
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0.210526	-0.210526	0	0	0.236842	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.85551	7.81562
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf		
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.539474	0.539474	0	0	0.486842	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.930329	inf	
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.07895	-1.07895	0	0	0.0263158	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.43362	3.79206
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.302632	0.302632	1	-1	1.06579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.427275	inf	
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.118421	0.118421	0	0	-1.03947	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.07894	inf	
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.157895	0.157895	0	0	-0.552632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.38292	inf	
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.328947	0.328947	0	0	0.723684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.510251	inf	
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0131579	-0.0131579	0	0	1.17105	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.23599	80.6172
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.592105	0.592105	0	0	0.802632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

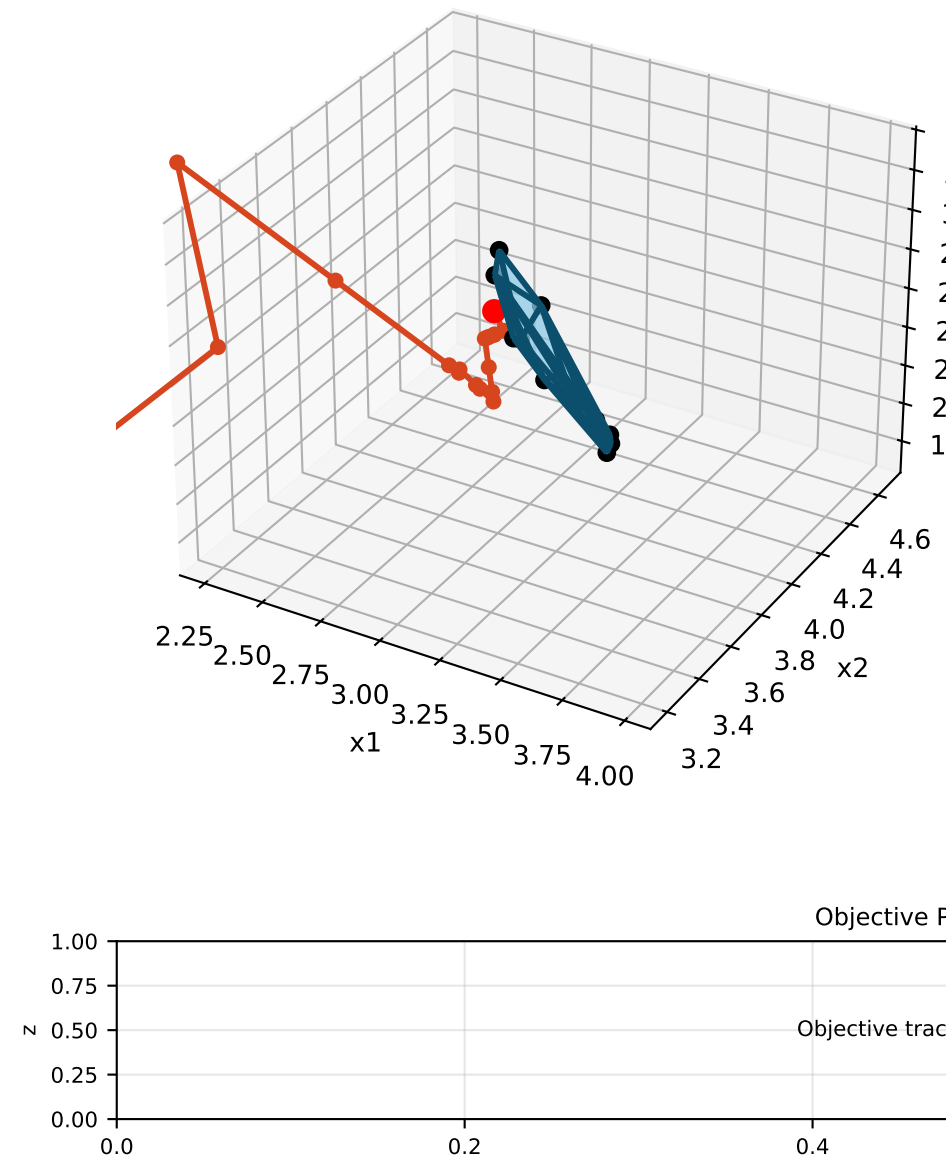
Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 20/31 | BIG-M step 19 | ENTER: u12 | LEAVE: a8

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u12 enters, a8 leaves.

Reduced cost of entering variable: -2.23026e+07

Minimum ratio theta\*: 0.0765644

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=2.69105$ ,  $x_2=4.2276$ ,  $x_3=2.37221$

Tableau objective: -2.60838e+07

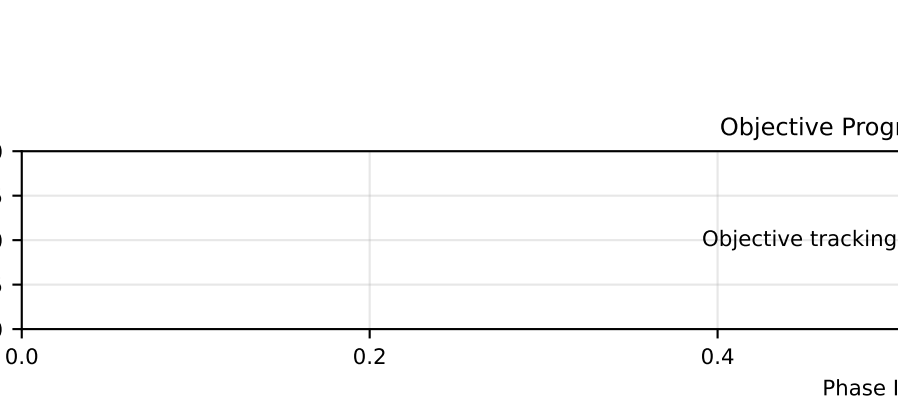
row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio																																																																																																																																																																																																																																																																																																																																																																																																											
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	-0.9	0.9	0	0	0	0	0	0	0	0	0	0	-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0.65	-0.65	0	0	0	0	0	0	0	9.30895																																																																																																																																																																																																																																																																																																																																																																																																													
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	-0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7724	295																																																																																																																																																																																																																																																																																																																																																																																																													
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	1.5	-1.5	0	0	0	0	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.75	0.75	0	0	0	0	0	0	0	9.62779	48.8																																																																																																																																																																																																																																																																																																																																																																																																											
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	-3	3	0	0	0	0	0	0	0	0	0	0	-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.900928																																																																																																																																																																																																																																																																																																																																																																																																													
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	6.3	-6.3	0	0	0	0	0	0	0	0	0	0	5.25	0	0	0	0	0	0	0	0	0	0	0	0	0	-2.55	2.55	0	0	0	0	0	0	0	3.00626	3.7																																																																																																																																																																																																																																																																																																																																																																																																											
R6(u19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	-0.7	0	0	0	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	-0.45	0.45	0	0	0	0	0	0	0	0.0163259	0.25																																																																																																																																																																																																																																																																																																																																																																																																										
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0.9	-0.9	0	0	0	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.69105	22																																																																																																																																																																																																																																																																																																																																																																																																												
R8(u12)	0	0	0	0	0	0	0	0	0	0	0	0	0	-7.6	7.6	0	0	0	0	0	0	1	-1	0	0	-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0765644	0.076																																																																																																																																																																																																																																																																																																																																																																																																												
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	-0.8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.83741	17.5																																																																																																																																																																																																																																																																																																																																																																																																											
R10(a10)	0	0	0	0	0	0	0	0	0	0	0	0	0	7.2	-7.2	0	-1	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3.2	3.2	0	0	0	0	0	0	0	0.518374	0.62																																																																																																																																																																																																																																																																																																																																																																																																										
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1	-3.1	0	0	0	-1	1	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.85	0.85	0	0	0	0	0	0	0	1.22055	3.0																																																																																																																																																																																																																																																																																																																																																																																																									
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	-6.5	6.5	0	0	0	0	0	0	0	0	0	0	-5.25	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.343084																																																																																																																																																																																																																																																																																																																																																																																																												
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	-2.1	2.1	0	0	0	0	0	0	0	0	0	0	-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.546362																																																																																																																																																																																																																																																																																																																																																																																																											
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	-0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.2276																																																																																																																																																																																																																																																																																																																																																																																																												
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	1.6	-1.6	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.83939	8.8																																																																																																																																																																																																																																																																																																																																																																																																									
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389																																																																																																																																																																																																																																																																																																																																																																																																										
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	-4.1	4.1	0	0	0	0	0	0	0	0	0	0	-2.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.971634																																																																																																																																																																																																																																																																																																																																																																																																										
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	8.2	-8.2	0	0	0	0	0	0	0	0	0	0	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.435101	4.1																																																																																																																																																																																																																																																																																																																																																																																																									
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	-2.3	2.3	0	0	0	0	0	0	0	0	-1	0	-0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.450445																																																																																																																																																																																																																																																																																																																																																																																																										
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.9	0.9	0	0	0	0	0	0	0	0	0	0	-1.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.08801																																																																																																																																																																																																																																																																																																																																																																																																										
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.2	1.2	0	0	0	0	0	0	0	0	0	0	-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.39501																																																																																																																																																																																																																																																																																																																																																																																																										
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	-2.5	2.5	0	0	0	0	0	0	0	0	0	0	-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.535437																																																																																																																																																																																																																																																																																																																																																																																																										
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	-0.1	0	0	0	0	0	0	0	0	0	0	1.25	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.23499	93.5																																																																																																																																																																																																																																																																																																																																																																																																									
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	-4.5	4.5	0	0	0	0	0	0	0	0	0	0	-2.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.92665																																																																																																																																																																																																																																																																																																																																																																																																										
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3	-3.3	0	0	0	0	0	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.93394	11.5																																																																																																																																																																																																																																																																																																																																																																																																								
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	-1.5	1.5	0	0	0	0	0	0	0	0	0	0	-1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.37221																																																																																																																																																																																																																																																																																																																																																																																																										
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	-4.7	4.7	0	0	0	0	0	0	0	0	0	0	-3.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.71486																																																																																																																																																																																																																																																																																																																																																																																																										
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	2.8	-2.8	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.294031	0.87																																																																																																																																																																																																																																																																																																																																																																																																									
ase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step





Teaching Mode | Rule: DANTZIG

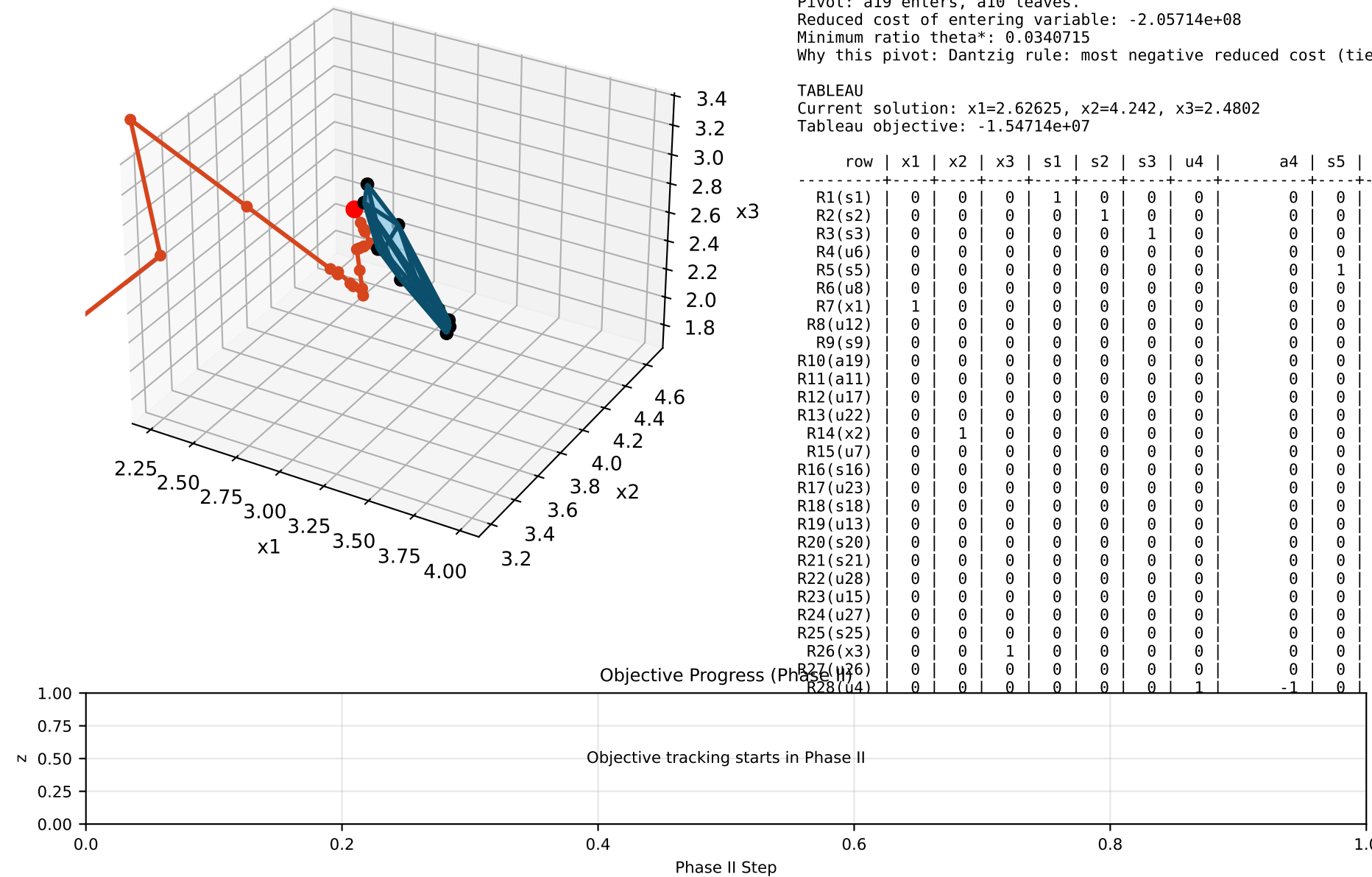
Minimum ratio theta\*: 0.0233228

Tableau objective: -2.24804e+07

```
row | x1 | x2 | x3 | s1 | s2
```

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 22/31 | BIG-M step 21 | ENTER: a19 | LEAVE: a10

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: a19 enters, a10 leaves.

Reduced cost of entering variable: -2.05714e+08

Minimum ratio theta\*: 0.0340715

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=2.62625, x2=4.242, x3=2.4802

Tableau objective: -1.54714e+07

	row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.125	0.125	0	0	0	0	0	0	-0.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	-0.25	0	0	0	0	0	9.37375	inf		
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0277778	-0.0277778	0	0	0	0	0	0	-0.138889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.111111	0.111111	0	0	0	0	0	0	7.758	27.1871	
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.208333	-0.208333	0	0	0	0	0	0	0.208333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.5198	4.47664			
R4(u6)	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	-0.416667	0.416667	0	0	0	0	0	0	-0.416667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.11692	inf			
R5(s5)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.875	-0.875	0	0	0	0	0	0	0.875	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.55268	0.317702			
R6(u8)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	-0.138889	0.138889	0	0	0	0	0	0	0.694444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0719964	inf		
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.125	-0.125	0	0	0	0	0	0	0.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.62625	2.07671		
R8(u12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.05556	1.05556	0	0	1	-1	0	0	-0.722222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.623737	inf		
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.111111	-0.111111	0	0	0	0	0	0	-0.555556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.77981	1.59141		
R10(a19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0972222	0.0972222	0	0	0	0	0	0	-0.263889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0340715	0.0340715			
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.430556	-0.430556	-1	1	0	0	0	0	-0.402778	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.997363	0.259283			
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.902778	0.902778	0	0	0	0	0	0	-0.736111	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.81106	inf			
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.291667	0.291667	0	0	0	0	0	0	0.708333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.697554	inf			
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0277778	0.0277778	0	0	0	0	0	0	0.138889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.242	inf		
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0.222222	-0.222222	0	0	0	0	0	0	0.388889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7242	0.788409		
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.67389	inf			
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.569444	0.569444	0	0	0	0	0	0	0.0972222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.26682	inf		
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.13889	-1.13889	0	0	0	0	0	0	0.805556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.76064	0.355102		
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.319444	0.319444	0	0	0	0	1	-1	0.847222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.616037	inf		
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.125	-0.125	0	0	0	0	0	0	-1.125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.15281	inf	
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.166667	0.166667	0	0	0	0	0	0	-0.666667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4814	inf		
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.347222	0.347222	0	0	0	0	0	0	0.486111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0.715428	inf
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0138889	-0.0138889	0	0	0	0	0	0	1.18056	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.22779	8.62857	
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.625	0.625	0	0	0	0	0	0	0.375	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25063	inf	
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.458333	-0.458333	0	0	0	0	0	0	-0.541667	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.69635	1.03027		
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.208333	0.208333	0	0	0	0	0	0	-0.208333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4802	inf		
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.652778	0.652778	0	0	0	0	0	0	-0.486111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.05324	inf		
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0.388889	-0.388889	0	0	0	0	0	0	1.05556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0924408	0.0571818		

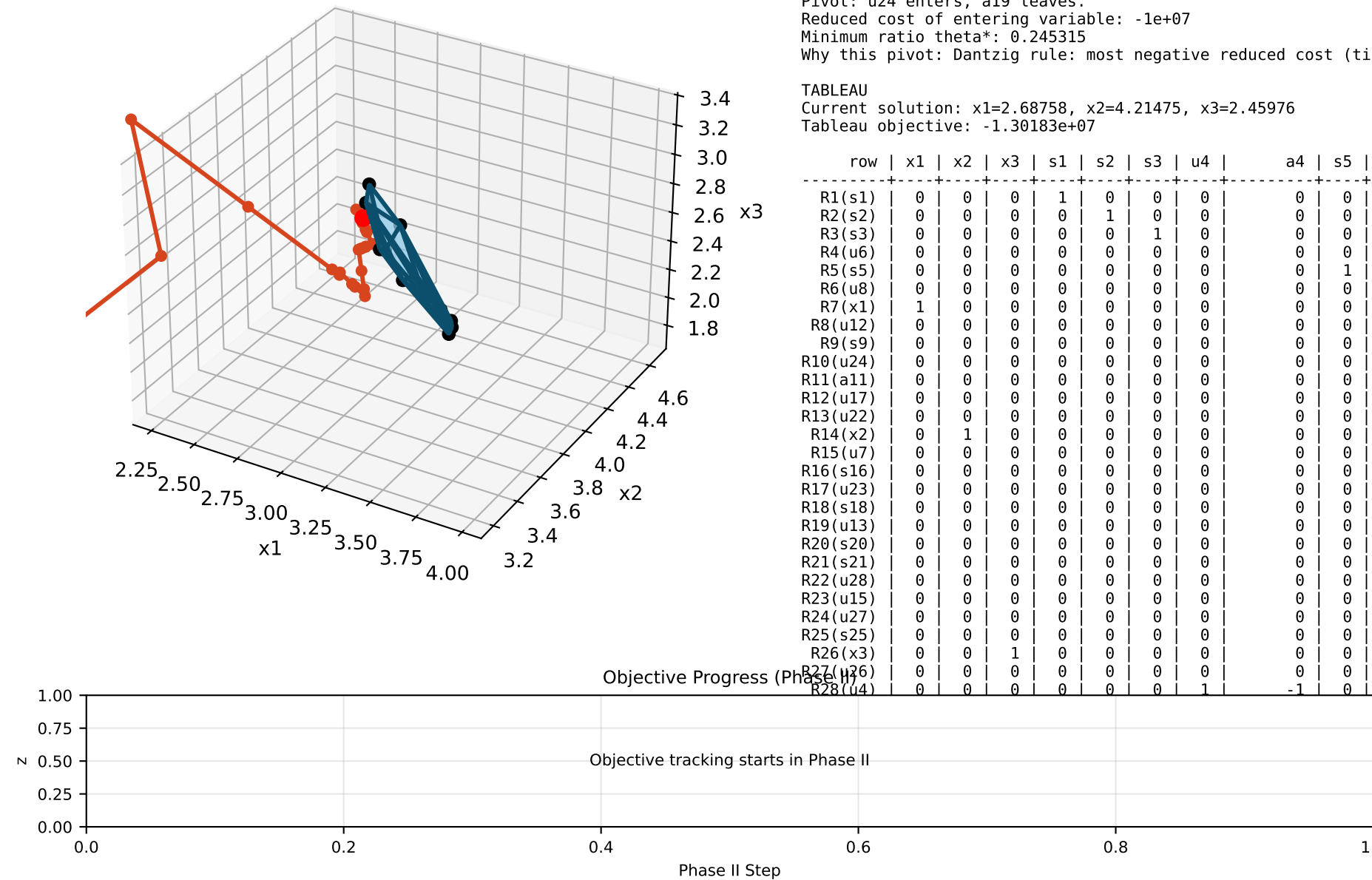
Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 23/31 | BIG-M step 22 | ENTER: u24 | LEAVE: a19

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u24 enters, a19 leaves.

Reduced cost of entering variable: -1e+07

Minimum ratio theta\*: 0.245315

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=2.68758, x2=4.21475, x3=2.45976

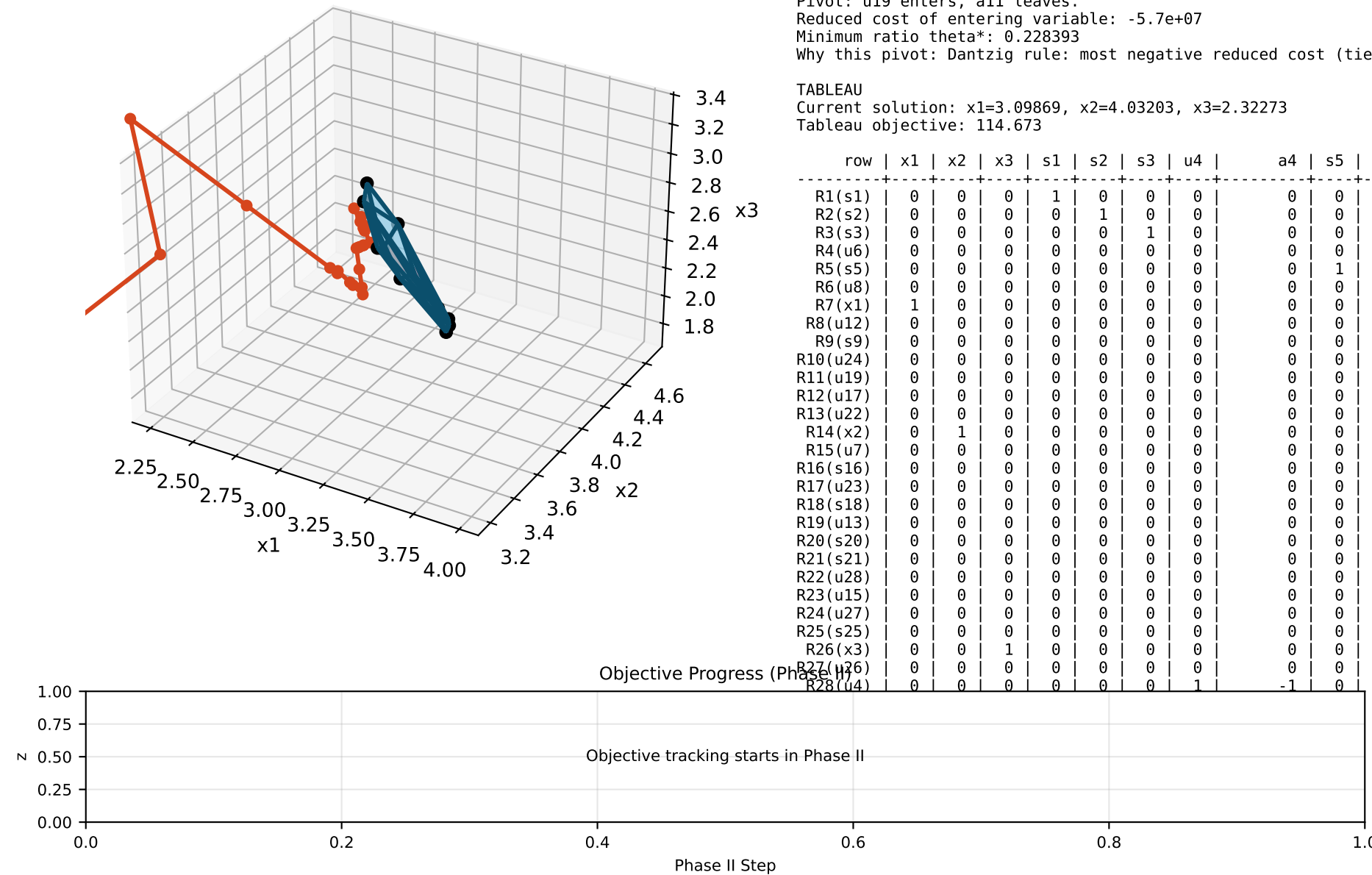
Tableau objective: -1.30183e+07

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio																																																																																																																																																																																																																																																																																																
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	0	0	0	0	0	0	0.35	0	0	0	0	0	1.8	-1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.31242	37.495																																																																																																																																																																																																																																																																																																	
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-0.05	0.05	0	0	0	0	0	0	-0.35	0	0	0	0	0	-0.8	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.78525	inf																																																																																																																																																																																																																																																																																															
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.15	-0.15	0	0	0	0	0	0	0.05	0	0	0	0	0	-0.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.54024	inf																																																																																																																																																																																																																																																																																															
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	-0.3	0.3	0	0	0	0	0	0	-0.1	0	0	0	0	0	1.2	-1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.07603	6.70151																																																																																																																																																																																																																																																																																															
R5(s5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.05	-1.05	0	0	0	0	0	0	1.35	0	0	0	0	0	1.8	-1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.49135	10.2107																																																																																																																																																																																																																																																																																															
R6(u8)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	-0.45	0.45	0	0	0	0	0	0	-0.15	0	0	0	0	0	-3.2	3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.181025	inf																																																																																																																																																																																																																																																																																															
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.05	0.05	0	0	0	0	0	0	-0.35	0	0	0	0	0	-1.8	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.68758	inf																																																																																																																																																																																																																																																																																															
R8(u12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.9	0.9	0	0	1	-1	0	0	-0.3	0	0	0	0	0	1.6	-1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.569223	2.80682																																																																																																																																																																																																																																																																																														
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	-0.5	0	0	0	0	0	0	0.5	0	0	0	0	0	4	-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.64352	3.20366																																																																																																																																																																																																																																																																																														
R10(u24)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.7	0.7	0	0	0	0	0	0	-1.9	0	0	0	0	0	-7.2	7.2	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0.245315	0.245315																																																																																																																																																																																																																																																																																																
R11(a11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	-0.8	-1	1	0	0	0	0	0.6	0	0	0	0	0	3.8	-3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.867892	1.88974																																																																																																																																																																																																																																																																																														
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	0	0	0	0	0	-1	0	0	0	1	-1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.845132	inf																																																																																																																																																																																																																																																																																															
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.35	0.35	0	0	0	0	0	0	0.55	0	0	0	0	0	-0.6	0.6	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0.717997	inf																																																																																																																																																																																																																																																																																															
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	0	0	0	0	0	0	0.35	0	0	0	0	0	0.8	-0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.21475	38.178																																																																																																																																																																																																																																																																																														
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	-0.05	0.05	0	0	0	0	0	0	-0.35	0	0	0	0	0	-2.8	2.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8196	inf																																																																																																																																																																																																																																																																																													
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	-0.7	0	0	0	0	0	0	1.9	0	0	1	0	0	7.2	-7.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.42857	5.67389																																																																																																																																																																																																																																																																																														
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.55	0.55	0	0	0	0	0	0	0.15	0	0	0	0	0	0.2	-0.2	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	1.26	45.6055																																																																																																																																																																																																																																																																																															
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	-1.1	0	0	0	0	0	0	0.7	0	0	0	0	0	-0.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.77427	inf																																																																																																																																																																																																																																																																																														
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.3	0.3	0	0	0	0	1	-1	0.9	0	0	0	0	0	0.2	-0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.609223	22.1773																																																																																																																																																																																																																																																																																													
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	-0.05	0	0	0	0	0	0	-0.65	0	0	0	0	0	1.8	-1.8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.09148	12.6112																																																																																																																																																																																																																																																																																													
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.05	0.05	0	0	0	0	0	0	-0.35	0	0	0	0	0	1.2	-1.2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.44052	14.8884																																																																																																																																																																																																																																																																																														
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.6	0.6	0	0	0	0	0	0	-0.2	0	0	0	0	0	-2.6	2.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.804014	inf																																																																																																																																																																																																																																																																																													
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.2	0.2	0	0	0	0	0	0	0.6	1	-1	0	0	0	-2.2	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.30274	inf																																																																																																																																																																																																																																																																																														
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.45	0.45	0	0	0	0	0	0	0.85	0	0	0	0	0	1.8	-1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	2.1893	9.00253																																																																																																																																																																																																																																																																																									
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.75	-0.75	0	0	0	0	0	0	0.25	0	0	0	0	0	3	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.59413	11.2712																																																																																																																																																																																																																																																																																												
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.15	0.15	0	0	0	0	0	0	-0.05	0	0	0	0	0	0.6	-0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.45976	29.7625																																																																																																																																																																																																																																																																																													
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.4	0.4	0	0	0	0	0	0	0.2	0	0	0	0	0	2.6	-2.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.96465	5.68589																																																																																																																																																																																																																																																																																												
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.228727	inf																																																																																																																																																																																																																																																																																													
base11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 24/31 | BIG-M step 23 | ENTER: u19 | LEAVE: a11

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u19 enters, a11 leaves.

Reduced cost of entering variable: -5.7e+07

Minimum ratio theta\*: 0.228393

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

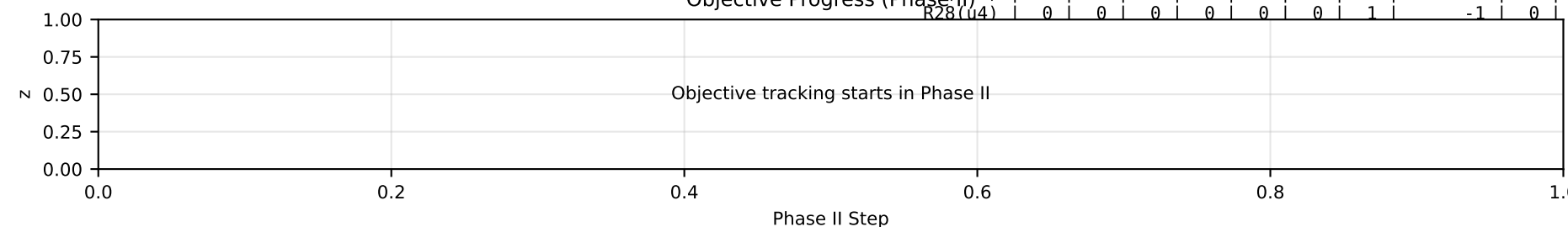
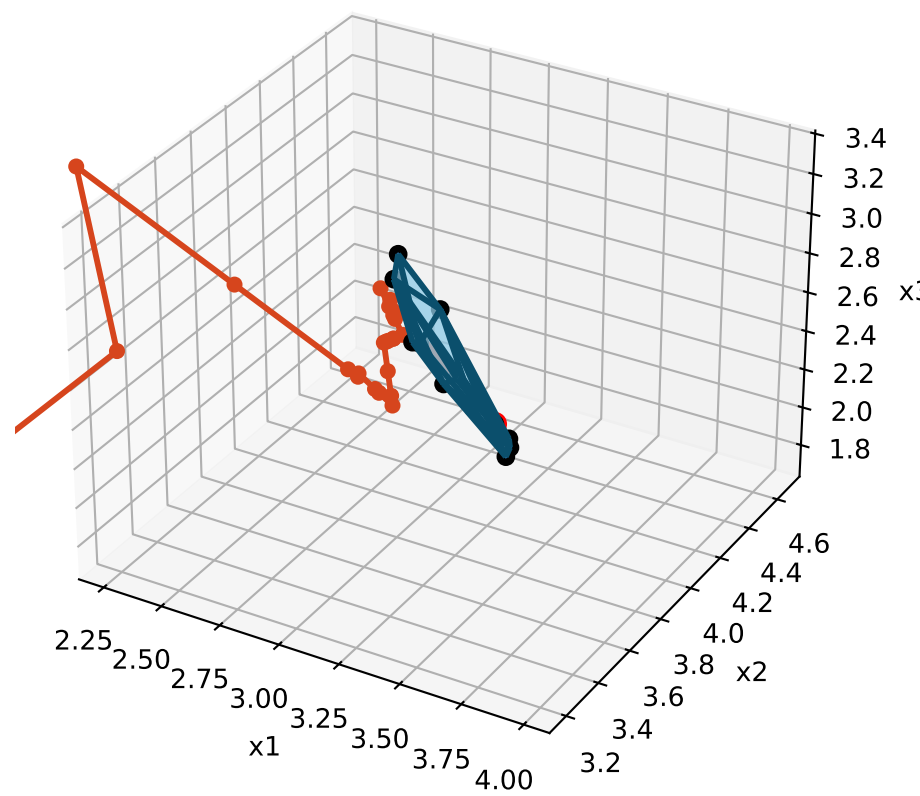
Current solution: x1=3.09869, x2=4.03203, x3=2.32273

Tableau objective: 114.673

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio											
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-0.328947	0.328947	0.473684	-0.473684	0	0	0	0	0	0.0657895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.90131	5.17357											
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.118421	-0.118421	-0.210526	0.210526	0	0	0	0	0	-0.223684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.96797	inf										
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.276316	-0.276316	-0.157895	0.157895	0	0	0	0	0	0.144737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.67727	inf										
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	-0.552632	0.552632	0.315789	-0.315789	0	0	0	0	0	-0.289474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.801961	0.896693											
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.671053	-0.671053	0.473684	-0.473684	0	0	0	0	0	1.06579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.08024	1.38408										
R6(u8)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0.223684	-0.223684	-0.842105	0.842105	0	0	0	0	0	0.355263	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.911881	inf										
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.328947	-0.328947	-0.473684	0.473684	0	0	0	0	0	-0.0657895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.09869	inf										
R8(u12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.23684	1.23684	0.421053	-0.421053	1	-1	0	0	0	-0.552632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.203795	0.355764										
R9(s9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-0.342105	0.342105	1.05263	-1.05263	0	0	0	0	0	-0.131579	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.729953	0.410881										
R10(u24)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.815789	-0.815789	-1.89474	1.89474	0	0	0	0	0	-0.763158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.88974	inf									
R11(u19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.210526	-0.210526	-0.263158	0.263158	0	0	0	0	0	0.157895	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.228393	0.228393									
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.789474	0.789474	-0.263158	0.263158	0	0	0	0	0	-0.842105	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.07352	inf									
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.223684	0.223684	-0.157895	0.157895	0	0	0	0	0	0.644737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.855033	inf									
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.118421	0.118421	0.210526	-0.210526	0	0	0	0	0	0.223684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.03203	5.26843									
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0.539474	-0.539474	-0.736842	0.736842	0	0	0	0	0	0.0921053	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4591	inf					
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.815789	0.815789	1.89474	-1.89474	0	0	0	0	0	0.763158	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.78415	0.753968						
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.592105	0.592105	0.0526316	-0.0526316	0	0	0	0	0	0.118421	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.21433	6.30002					
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.18421	-1.18421	-0.105263	0.105263	0	0	0	0	0	0.763158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.86563	inf					
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.342105	0.342105	0.0526316	-0.0526316	0	0	1	-1	0	0.868421	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.563544	3.04611					
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.328947	0.328947	0.473684	-0.473684	0	0	0	0	0	-0.934211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.68037	1.71749					
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.302632	0.302632	0.315789	-0.315789	0	0	0	0	0	-0.539474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.16645	2.03376					
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.0526316	0.0526316	-0.684211	0.684211	0	0	0	0	0	0.210526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	1.39783	inf			
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.263158	-0.263158	0.578947	-0.578947	0	0	0	0	0	0.947368	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.80521	inf				
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.828947	0.828947	0.473684	-0.473684	0	0	0	0	0	0.565789	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	1.7782	1.21628
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.118421	-0.118421	0.789474	-0.789474	0	0	0	0	0	-0.223684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.90896	1.53138				
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.276316	0.276316	0.157895	-0.157895	0	0	0	0	0	0.144737	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.32273	4.0996					
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.947368	0.947368	0.684211	-0.684211	0	0	0	0	0	-0.210526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	1.37083	0.755636
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0																																															

## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 25/31 | BIG-M step 24 | ENTER: u11 | LEAVE: u1

COMMENT

Teaching Mode | Rule: DANTZIN

Pivot: u11 enters, u12 leave

Reduced cost of entering variable: -3.1052

Minimum ratio theta\*: 0.48401

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

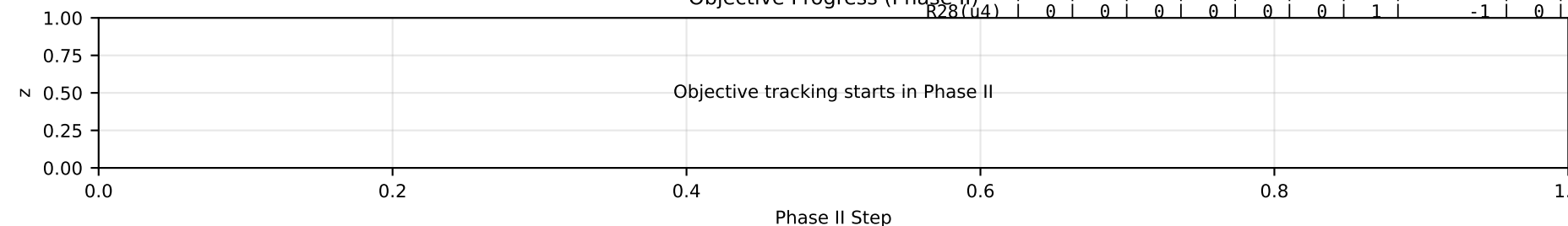
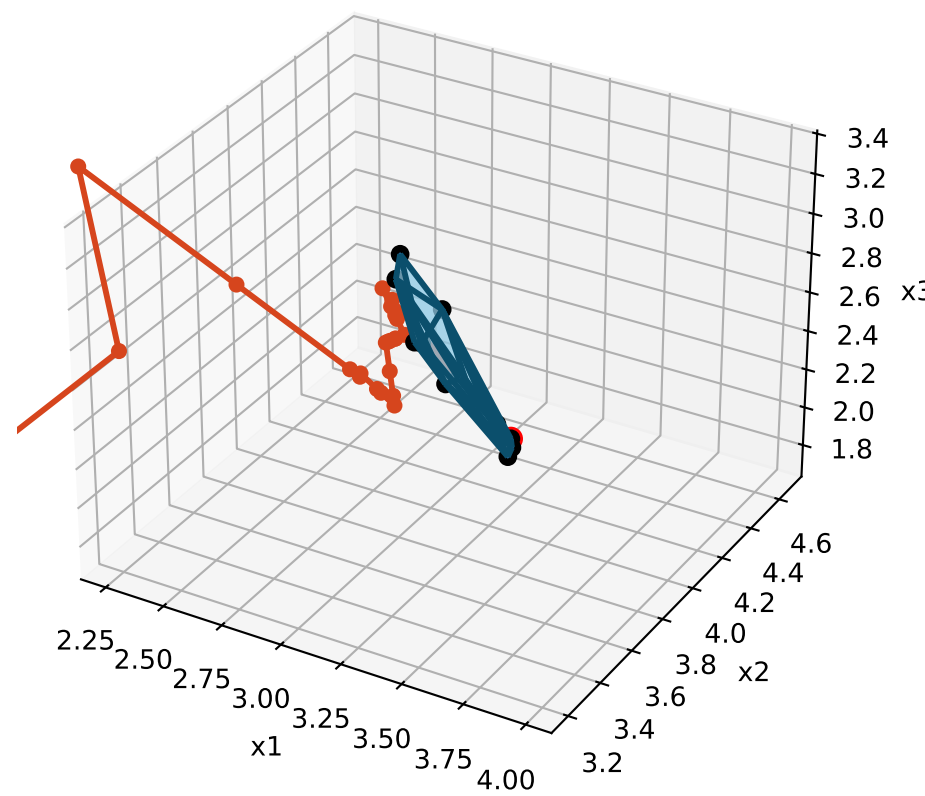
Current solution:  $x_1=3.32795$ ,  $x_2=3.93014$ ,  $x_3=2.246$ .

Tableau objective: 116.170

[illegible]

## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 26/31 | BIG-M step 25 | ENTER: u10 | LEAVE: s

COMMENTS

Teaching Mode | Rule: DANTZI

Pivot: u10 enters, s9 leaves

Reduced cost of entering variable: -8.687

Minimum ratio theta\*: 0.080169

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=3.41314$ ,  $x_2=3.89005$ ,  $x_3=2.2312$

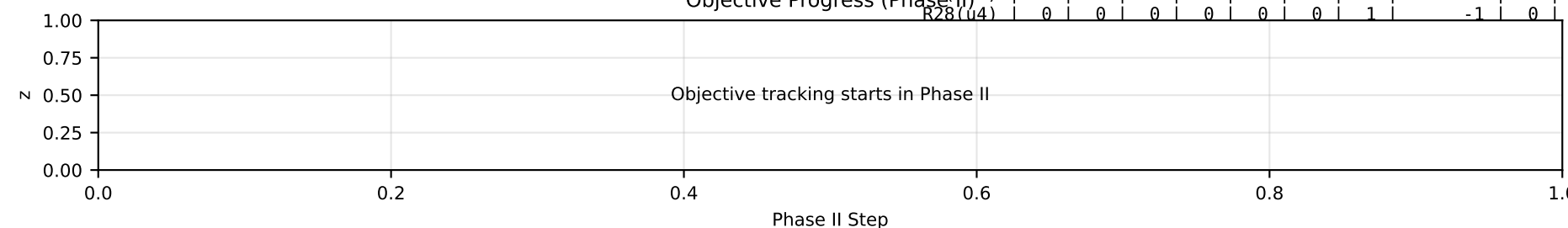
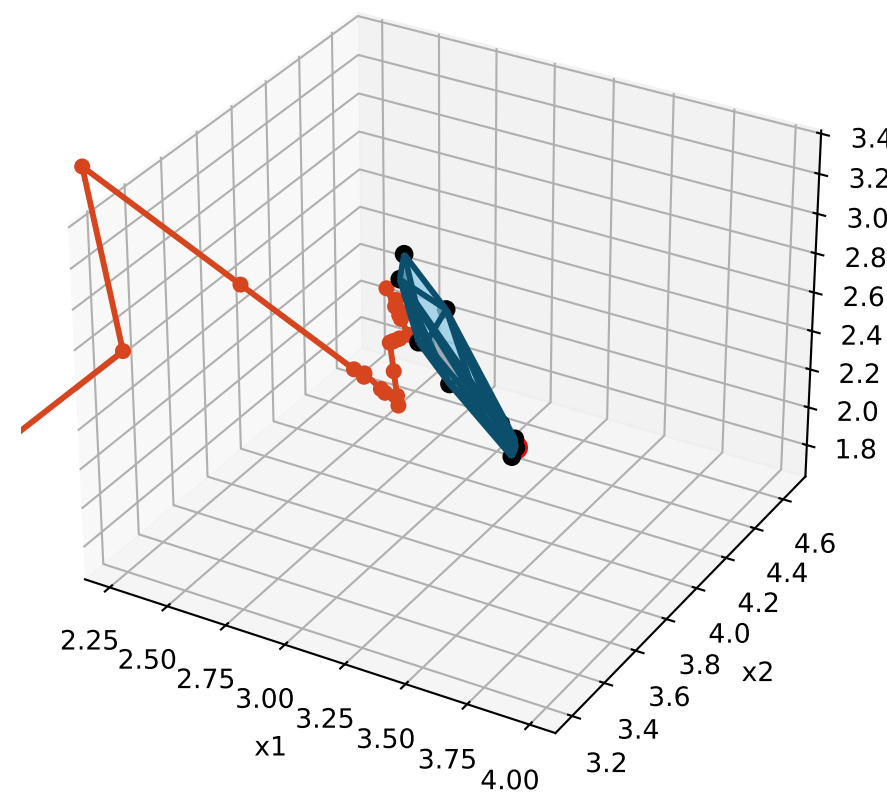
Tableau objective: 116.873

row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio							
R1(s1)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	-0.386364	0	0	0	0	-0.159091	0.159091	0	0	0.204545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.58686	8.16193							
R2(s2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.181818	0	0	0	0	0.0454545	-0.0454545	0	0	-0.272727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.10995	inf						
R3(s3)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.0681818	0	0	0	0	0.204545	-0.204545	0	0	0.0227273	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.76873	inf					
R4(u6)	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	-0.136364	0	0	0	0	-0.409091	0.409091	0	0	-0.0454545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.619051	1.7309						
R5(s5)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	-0.75	0	0	0	0	0.75	-0.75	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.68562	0.897442						
R6(u8)	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0.818182	0	0	0	0	-0.0454545	0.0454545	0	0	0.272727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.49985	inf					
R7(x1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.386364	0	0	0	0	0.159091	-0.159091	0	0	-0.204545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.41314	inf				
R8(u11)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.06818	0	0	1	-1	-0.295455	0.295455	0	0	0.0227273	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.719511	inf			
R9(u10)	0	0	0	0	0	0	0	0	0.363636	1	0	0	0	0	0	0.363636	1	-1	0	0	-0.909091	0.909091	0	0	0.454545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0801697	0.0801697				
R10(u24)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.72727	0	0	0	0	0.181818	-0.181818	0	0	-1.09091	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	3.18762	inf					
R11(u19)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.204545	0	0	0	0	0.113636	-0.113636	0	0	0.0681818	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.0086	inf			
R12(u17)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.568182	0	0	0	0	-0.795455	0.795455	0	0	-0.477273	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.32616	inf				
R13(u22)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	-0.25	0.25	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.986572	inf					
R14(x2)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.181818	0	0	0	0	-0.0454545	0.0454545	0	0	0.272727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.89005	7.86027			
R15(u7)	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0.590909	0	0	0	0	0.272727	-0.272727	0	0	-0.136364	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.94601	inf			
R16(s16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1.72727	0	0	0	0	-0.181818	0.181818	0	0	1.09091	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.48626	0.603594			
R17(u23)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.159091	0	0	0	0	-0.522727	0.522727	0	0	0.386364	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.22393	inf		
R18(s18)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.318182	0	0	0	0	1.04545	-1.04545	0	0	0.227273	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.84643	4.47609		
R19(u13)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0681818	0	0	0	0	-0.295455	0.295455	1	-1	1.02273	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.553102	inf			
R20(s20)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.386364	0	0	0	0	-0.159091	0.159091	0	0	-0.795455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.36592	2.30692		
R21(s21)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.227273	0	0	0	0	-0.181818	0.181818	0	0	-0.409091	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.96349	3.22176			
R22(u28)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.75	0	0	0	0	-0.25	0.25	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	1.89435	inf
R23(u15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.522727	0	0	0	0	0.0681818	-0.0681818	0	0	0.840909	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.20067	inf		
R24(u27)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.204545	0	0	0	0	-0.613636	0.613636	0	0	0.931818	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.50383	2.75365		
R25(s25)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.886364	0	0	0	0	0.340909	-0.340909	0	0	-0.295455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33143	1.44691		
R26(x3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-0.0681818	0	0	0	0	-0.204545	0.204545	0	0	-0.0227273	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.23127	11.9803		
R27(u26)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.386364	0	0	0	0	-0.659091	0.659091	0	0	0.204545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.954486	0.978509		
R28(u4)	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0.818182	0	0	0	0	0.454545	-0.454545	0	0	0.272727	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.83217	inf	
base											1.5e+07	0	1.5e+07	0	1.5e+07	3.15909	0	1.5e+07	0	1.5e+07	-0.522727	1.5e+07	0	1.5e+07	-0.613636	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	0	1.5e+07	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	1.5e+07	0	1.5e+07	116.873				



## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 27/31 | BIG-M step 26 | ENTER: s14 | LEAVE: u10

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: s14 enters, u10 leave

Reduced cost of entering variable: -0.61363

Minimum ratio theta\*: 0.17637

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

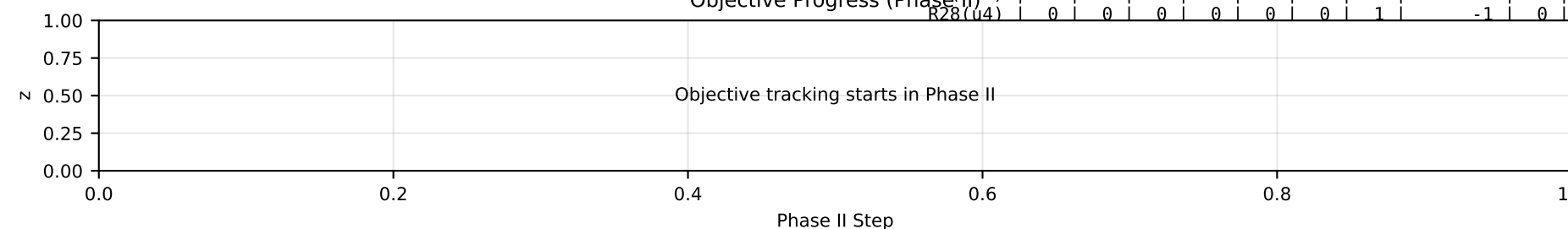
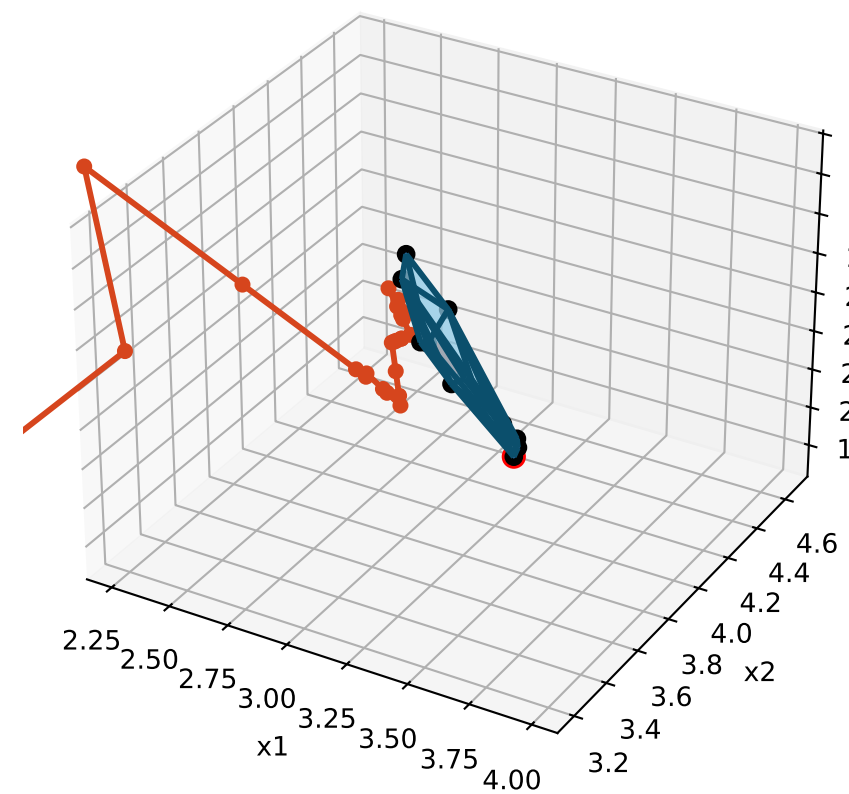
Current solution:  $x_1=3.44921$ ,  $x_2=3.84195$ ,  $x_3=2.23528$

Tableau objective: 116.98

[illegible]

## Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 28/31 | BIG-M step 27 | ENTER: u12 | LEAVE: u1

COMMENTS

Teaching Mode | Rule: DANTZIC

Pivot: u12 enters, u13 leaves

Reduced cost of entering variable: -1.7

Minimum ratio theta\*: 0.21298

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

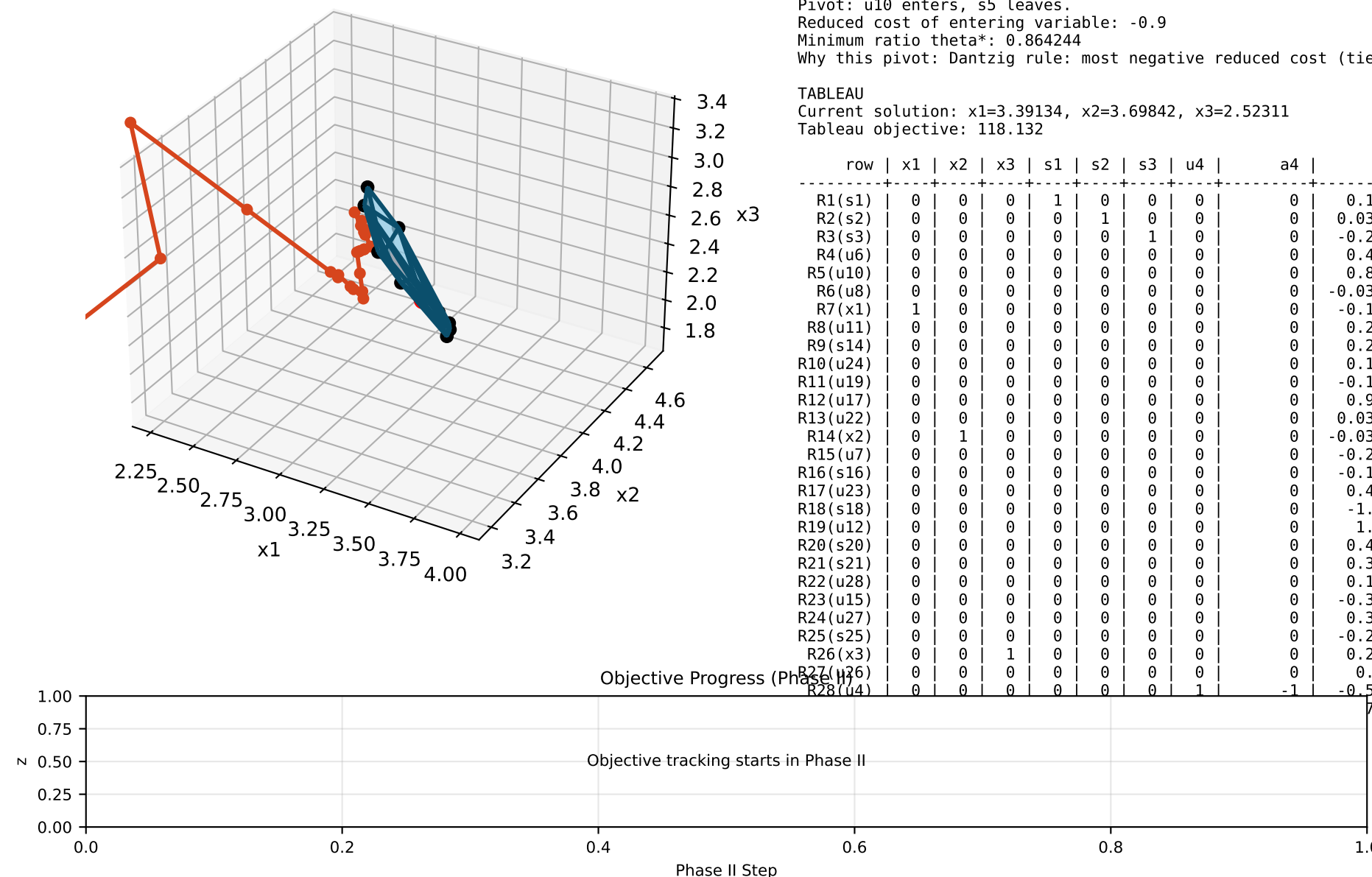
Current solution:  $x_1=3.50246$ ,  $x_2=3.73546$ ,  $x_3=2.28853$

Tableau objective: 117.354

[illegible]

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path



State 29/31 | BIG-M step 28 | ENTER: u10 | LEAVE: s5

COMMENTS

Teaching Mode | Rule: DANTZIG

Pivot: u10 enters, s5 leaves.

Reduced cost of entering variable: -0.9

Minimum ratio theta\*: 0.864244

Why this pivot: Dantzig rule: most negative reduced cost (ties by smallest index). Minimum-ratio test (ties by smallest row index).

TABLEAU

Current solution:  $x_1=3.39134$ ,  $x_2=3.69842$ ,  $x_3=2.52311$

Tableau objective: 118.132

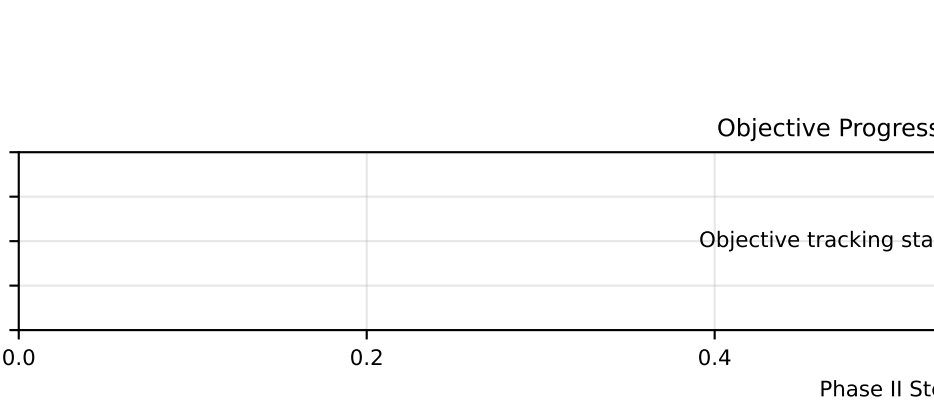
row	x1	x2	x3	s1	s2	s3	u4	a4	s5	u6	a6	u7	a7	u8	a8	s9	u10	a10	u11	a11	u12	a12	u13	a13	s14	u15	a15	s16	u17	a17	s18	u19	a19	s20	s21	u22	a22	u23	a23	u24	a24	s25	u26	a26	u27	a27	u28	a28	rhs	ratio							
R1(s1)	0	0	0	1	0	0	0	0	0.103448	0	0	0	0	0	0	-0.482759	0	0	0	0	0	0	-0.275862	0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.60866	inf							
R2(s2)	0	0	0	0	1	0	0	0	0.0344828	0	0	0	0	0	0	0.172414	0	0	0	0	0	0	0.241379	-0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.30158	inf					
R3(s3)	0	0	0	0	0	1	0	0	-0.218391	0	0	0	0	0	0	0.241379	0	0	0	0	0	0	-0.137931	0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.47689	35.7791				
R4(u6)	0	0	0	0	0	0	0	0	0.436782	1	-1	0	0	0	0	-0.482759	0	0	0	0	0	0	-0.275862	0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.20272	inf				
R5(u10)	0	0	0	0	0	0	0	0	0.804598	0	0	0	0	0	0	-0.310345	1	-1	0	0	0	0	-1.03448	1.03448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.864244	0.864244				
R6(u8)	0	0	0	0	0	0	0	0	-0.0344828	0	0	0	0	1	-1	0.827586	0	0	0	0	0	0	-0.241379	0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.30822	31.3894			
R7(x1)	1	0	0	0	0	0	0	0	-0.103448	0	0	0	0	0	0	0.482759	0	0	0	0	0	0	0.275862	-0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.39134	27.2413			
R8(u11)	0	0	0	0	0	0	0	0	0.298851	0	0	0	0	0	0	0.827586	0	0	1	-1	0	0	-0.241379	0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.08975	inf		
R9(s14)	0	0	0	0	0	0	0	0	0.298851	0	0	0	0	0	0	-0.172414	0	0	0	0	0	0	0.758621	-0.758621	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.923344	inf		
R10(u24)	0	0	0	0	0	0	0	0	0.137931	0	0	0	0	0	0	1.68966	0	0	0	0	0	0	0.965517	-0.965517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.95415	inf		
R11(u19)	0	0	0	0	0	0	0	0	-0.137931	0	0	0	0	0	0	0.310345	0	0	0	0	0	0	0.0344828	-0.0344828	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.187432	1.9576		
R12(u17)	0	0	0	0	0	0	0	0	0.965517	0	0	0	0	0	0	-0.172414	0	0	0	0	0	0	-0.241379	0.241379	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.82015	inf		
R13(u22)	0	0	0	0	0	0	0	0	0.0344828	0	0	0	0	0	0	0.172414	0	0	0	0	0	0	-0.758621	0.758621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.625103	inf		
R14(x2)	0	1	0	0	0	0	0	0	-0.0344828	0	0	0	0	0	0	-0.172414	0	0	0	0	0	0	-0.241379	0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.69842	87.1607		
R15(u7)	0	0	0	0	0	0	0	0	0	0.241379	0	0	1	-1	0	0.793103	0	0	0	0	0	0	0.310345	-0.310345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.71079	9.90022		
R16(s16)	0	0	0	0	0	0	0	0	-0.137931	0	0	0	0	0	0	-1.68966	0	0	0	0	0	0	-0.965517	0.965517	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.71974	10.896		
R17(u23)	0	0	0	0	0	0	0	0	0.425287	0	0	0	0	0	0	-0.206897	0	0	0	0	0	0	-0.689655	0.689655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.55935	inf		
R18(s18)	0	0	0	0	0	0	0	0	-1.14943	0	0	0	0	0	0	0.586207	0	0	0	0	0	0	0.62069	-0.62069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25224	2.44081		
R19(u12)	0	0	0	0	0	0	0	0	1.03448	0	0	0	0	0	0	-0.827586	0	0	0	0	0	0	0.758621	-0.758621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.32415	inf	
R20(s20)	0	0	0	0	0	0	0	0	0.402299	0	0	0	0	0	0	-0.655172	0	0	0	0	0	0	0.482759	-0.482759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.31106	inf		
R21(s21)	0	0	0	0	0	0	0	0	0.310345	0	0	0	0	0	0	-0.448276	0	0	0	0	0	0	0.172414	-0.172414	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.58198	inf		
R22(u28)	0	0	0	0	0	0	0	0	0.183908	0	0	0	0	0	0	0.586207	0	0	0	0	0	0	-0.37931	0.37931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.99455	inf
R23(u15)	0	0	0	0	0	0	0	0	-0.321839	0	0	0	0	0	0	0.724138	0	0	0	0	0	0	-0.586207	0.586207	0	1	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.33394	4.19909	
R24(u27)	0	0	0	0	0	0	0	0	0.356322	0	0	0	0	0	0	-0.551724	0	0	0	0	0	0	-1.17241	1.17241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.45599	inf		
R25(s25)	0	0	0	0	0	0	0	0	-0.264368	0	0	0	0	0	0	-0.655172	0	0	0	0	0	0	0.482759	-0.482759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.15282	10.4598		
R26(x3)	0	0	1	0	0	0	0	0	0.218391	0	0	0	0	0	0	0.241379	0	0	0	0	0	0	-0.137931	0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.52311	inf		
R27(u16)	0	0	0	0	0	0	0	0	0.62069	0	0	0	0	0	0	-0.896552	0	0	0	0	0	0	-0.655172	0.655172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.63836	inf	
R28(u4)	0	0	0	0	0	0	1	-1	-0.551724	0	0	0	0	0	0	1.24138	0	0	0	0	0	0	0.137931	-0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.978457	2.29116		
avg	0	0	0	0	0	0	0	0	0.724138	0	1.5e+07	0	1.5e+07	0	1.5e+07	2.62069	0	1.5e+07	0	1.5e+07	0	1.5e+07	0.0689656	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+07	0	0	1.5e+																					

Objective Progress (Phase II)

Objective tracking starts in Phase II

Phase II Step





## Teaching

Phase I objective value: 118.132

Artificial vars removed: a4, a6, a7, a8, a10,

```
No artificial variable remained basic before cleanup.
```

Big-M phase complete. Artificial variables removed be

Current

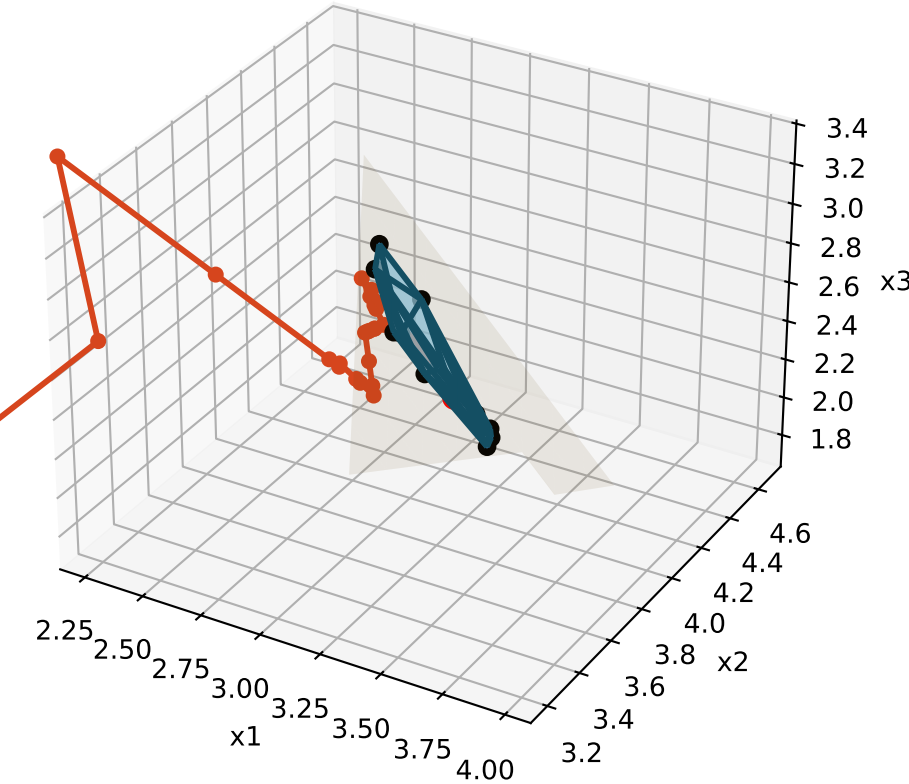
Tableau objective: 118.132

[illegible]

Two-Phase Simplex Report

Feasible polytope + extreme points + simplex path

$15x_1 + 10x_2 + 12x_3 = 118$



State 31/31 | PHASE II step 0 | Z=118.132

COMMENTS  
Teaching Mode | PHASE II  
Original objective restored after Big-M cleanup.

TABLEAU  
Current solution:  $x_1=3.39134$ ,  $x_2=3.69842$ ,  $x_3=2.52311$   
Objective z: 118.132

row	x1	x2	x3	s1	s2	s3	u4	s5	u6	u7	u8	s9	u10	u11	u12	u13	s14	u15	s16	u17	s18	u19	s20	s21	u22	u23	u24	s25	u26	u27	u28	rhs	ratio			
R1(s1)	0	0	0	1	0	0	0	0.103448	0	0	0	-0.482759	0	0	0	-0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.60866	inf			
R2(s2)	0	0	0	0	1	0	0	0.0344828	0	0	0	0.172414	0	0	0	0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.30158	inf		
R3(s3)	0	0	0	0	0	1	0	-0.218391	0	0	0	0.241379	0	0	0	0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.47689	inf		
R4(u6)	0	0	0	0	0	0	0	0.436782	1	0	0	-0.482759	0	0	0	-0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.20272	inf		
R5(u10)	0	0	0	0	0	0	0	0.804598	0	0	0	-0.310345	1	0	0	-1.03448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.864244	inf		
R6(u8)	0	0	0	0	0	0	0	-0.0344828	0	0	1	0.827586	0	0	0	-0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.30822	inf	
R7(x1)	1	0	0	0	0	0	0	-0.103448	0	0	0	0.482759	0	0	0	0.275862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.39134	inf		
R8(u11)	0	0	0	0	0	0	0	0.298851	0	0	0	0.827586	0	1	0	-0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.08975	inf	
R9(s14)	0	0	0	0	0	0	0	0.298851	0	0	0	-0.172414	0	0	0	0.758621	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.923344	inf		
R10(u24)	0	0	0	0	0	0	0	0.137931	0	0	0	1.68966	0	0	0	0.965517	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3.95415	inf	
R11(u19)	0	0	0	0	0	0	0	-0.137931	0	0	0	0.310345	0	0	0	0.0344828	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.187432	inf	
R12(u17)	0	0	0	0	0	0	0	0.965517	0	0	0	-0.172414	0	0	0	-0.241379	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2.82015	inf	
R13(u22)	0	0	0	0	0	0	0	0.0344828	0	0	0	0.172414	0	0	0	-0.758621	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.625103	inf	
R14(x2)	0	1	0	0	0	0	0	-0.0344828	0	0	0	-0.172414	0	0	0	-0.241379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.69842	inf	
R15(u7)	0	0	0	0	0	0	0	-0.241379	0	1	0	0.793103	0	0	0	0.310345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.71079	inf
R16(s16)	0	0	0	0	0	0	0	-0.137931	0	0	0	-1.68966	0	0	0	-0.965517	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.71974	inf	
R17(u23)	0	0	0	0	0	0	0	0.425287	0	0	0	-0.206897	0	0	0	-0.689655	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1.55935	inf	
R18(s18)	0	0	0	0	0	0	0	-1.14943	0	0	0	0.586207	0	0	0	0.62069	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25224	inf
R19(u12)	0	0	0	0	0	0	0	1.03448	0	0	0	-0.827586	0	0	1	-0.758621	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.32415	inf
R20(s20)	0	0	0	0	0	0	0	0.402299	0	0	0	-0.655172	0	0	0	0.482759	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3.31106	inf
R21(s21)	0	0	0	0	0	0	0	0.310345	0	0	0	-0.448276	0	0	0	0.172414	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2.58198	inf
R22(u28)	0	0	0	0	0	0	0	0.183908	0	0	0	0.586207	0	0	0	-0.37931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1.99455	inf
R23(u15)	0	0	0	0	0	0	0	-0.321839	0	0	0	0.724138	0	0	0	-0.586207	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.33394	inf
R24(u27)	0	0	0	0	0	0	0	0.356322	0	0	0	-0.551724	0	0	0	-1.17241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1.45599	inf
R25(s25)	0	0	0	0	0	0	0	-0.264368	0	0	0	-0.655172	0	0	0	0.482759	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3.15282	inf
R26(x3)	0	0	1	0	0	0	0	0.218391	0	0	0	-0.241379	0	0	0	-0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.52311	inf
R27(u26)	0	0	0	0	0	0	0	0.62069	0	0	0	-0.896552	0	0	0	-0.655172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1.63836	inf
R28(u4)	0	0	0	0	0	0	1	-0.551724	0	0	0	1.24138	0	0	0	0.137931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.978457	inf
Rz	0	0	0	0	0	0	0	0.724138	0	0	0	2.62069	0	0	0	0.0689655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	118.132	-	

Objective Progress (Phase II)

