Read in the following dictionary:

x_{10}	3.0	$+7.00x_1 -6.00x_2 -7.00x_3 +9.00x_4 -1.00x_5 -10.00x_6 -8.00x_7 +1.00x_8 +2.00x_9$
x_{11}	68.0	$-8.00x_1 -5.00x_2 -9.00x_3 -8.00x_4 -10.00x_5 +3.00x_6 -7.00x_7 -2.00x_8 -9.00x_9$
x_{12}	41.0	$-3.00x_1 -5.00x_2 -7.00x_3 +6.00x_4 -9.00x_5 \qquad -10.00x_7 -4.00x_8 +1.00x_9$
x_{13}	57.0	$-6.00x_1 +4.00x_2 -4.00x_3 -10.00x_4 -5.00x_5 +6.00x_6 -10.00x_7 -5.00x_8 -5.00x_9$
x_{14}	-4.0	$+2.00x_2 +8.00x_3 +4.00x_4 +7.00x_5 -4.00x_6 \qquad +5.00x_8 -6.00x_9$
x_{15}	-11.0	$-3.00x_1 +6.00x_2 -4.00x_3 +10.00x_4 +5.00x_5 -6.00x_6 +6.00x_7 +5.00x_8 -1.00x_9$
z	0.0	$-1.00x_1 -4.00x_2 +3.00x_3 +3.00x_4 -3.00x_5 -3.00x_6 -2.00x_7 -3.00x_8 +1.00x_9$

0.1 Initialization Phase: Dual Problem Solving

New Objective in primal was changed to :

$$\max \sum_{j=1}^{9} -x_j$$

Primal variable x_j corresponds to dual variable y_j for $j = 1, \ldots, 15$ Dual Dictionary (with objective changed is):

y_1	1.0	$-7.00y_{10} +8.00y_{11} +3.00y_{12} +6.00y_{13} \qquad +3.00y_{15}$
y_2	1.0	$+6.00y_{10} +5.00y_{11} +5.00y_{12} -4.00y_{13} -2.00y_{14} -6.00y_{15}$
y_3	1.0	$+7.00y_{10} +9.00y_{11} +7.00y_{12} +4.00y_{13} -8.00y_{14} +4.00y_{15}$
y_4	1.0	$-9.00y_{10} +8.00y_{11} -6.00y_{12} +10.00y_{13} -4.00y_{14} -10.00y_{15}$
y_5	1.0	$+1.00y_{10} +10.00y_{11} +9.00y_{12} +5.00y_{13} -7.00y_{14} -5.00y_{15}$
y_6	1.0	$+10.00y_{10} -3.00y_{11} \qquad -6.00y_{13} +4.00y_{14} +6.00y_{15}$
y_7	1.0	$+8.00y_{10} +7.00y_{11} +10.00y_{12} +10.00y_{13} \qquad -6.00y_{15}$
y_8	1.0	$-1.00y_{10} +2.00y_{11} +4.00y_{12} +5.00y_{13} -5.00y_{14} -5.00y_{15}$
y_9	1.0	$-2.00y_{10} +9.00y_{11} -1.00y_{12} +5.00y_{13} +6.00y_{14} +1.00y_{15}$
z	-0	$-3.00y_{10} -68.00y_{11} -41.00y_{12} -57.00y_{13} +4.00y_{14} +11.00y_{15}$

Initialization succeeded in finding final dual dictionary with 6 pivots

y_1	1.3	$-1.20y_{14} +10.40y_{11} +1.20y_{12} +9.00y_{13} -0.30y_4 -9.70y_{10}$
y_2	0.4	$+0.40y_{14} +0.20y_{11} +8.60y_{12} -10.00y_{13} +0.60y_4 +11.40y_{10}$
y_5	0.5	$-5.00y_{14} +6.00y_{11} +12.00y_{12} +0.00y_{13} +0.50y_4 +5.50y_{10}$
y_3	1.4	$-9.60y_{14} +12.20y_{11} +4.60y_{12} +8.00y_{13} -0.40y_4 +3.40y_{10}$
y_{15}	0.1	$-0.40y_{14} +0.80y_{11} -0.60y_{12} +1.00y_{13} -0.10y_4 -0.90y_{10}$
y_6	1.6	$+1.60y_{14} +1.80y_{11} -3.60y_{12} +0.00y_{13} -0.60y_4 +4.60y_{10}$
y_7	0.4	$+2.40y_{14} +2.20y_{11} +13.60y_{12} +4.00y_{13} +0.60y_4 +13.40y_{10}$
y_8	0.5	$-3.00y_{14} -2.00y_{11} +7.00y_{12} +0.00y_{13} +0.50y_4 +3.50y_{10}$
y_9	1.1	$+5.60y_{14} +9.80y_{11} -1.60y_{12} +6.00y_{13} -0.10y_4 -2.90y_{10}$
z	1.1	$-0.40y_{14} -59.20y_{11} -47.60y_{12} -46.00y_{13} -1.10y_4 -12.90y_{10}$

Primal Dictionary is:

x_{14}	0.4	$+1.20x_1$	$-0.40x_2$	$+5.00x_5$	$+9.60x_3$	$+0.40x_{15}$	$-1.60x_6$	$-2.40x_7$	$+3.00x_8$	$-5.60x_9$
x_{11}	59.2	$-10.40x_1$	$-0.20x_2$	$-6.00x_5$	$-12.20x_3$	$-0.80x_{15}$	$-1.80x_6$	$-2.20x_7$	$+2.00x_8$	$-9.80x_9$
x_{12}	47.6	$-1.20x_1$	$-8.60x_2$	$-12.00x_5$	$-4.60x_3$	$+0.60x_{15}$	$+3.60x_6$	$-13.60x_7$	$-7.00x_8$	$+1.60x_9$
x_{13}	46.0	$-9.00x_1$	$+10.00x_2$	$-0.00x_5$	$-8.00x_3$	$-1.00x_{15}$	$-0.00x_6$	$-4.00x_7$	$-0.00x_8$	$-6.00x_9$
x_4	1.1	$+0.30x_1$	$-0.60x_2$	$-0.50x_5$	$+0.40x_3$	$+0.10x_{15}$	$+0.60x_6$	$-0.60x_7$	$-0.50x_8$	$+0.10x_9$
x_{10}	12.9	$+9.70x_1$	$-11.40x_2$	$-5.50x_5$	$-3.40x_3$	$+0.90x_{15}$	$-4.60x_6$	$-13.40x_7$	$-3.50x_8$	$+2.90x_9$
z	-1.1	$-1.30x_1$	$-0.40x_2$	$-0.50x_5$	$-1.40x_3$	$-0.10x_{15}$	$-1.60x_6$	$-0.40x_7$	$-0.50x_8$	$-1.10x_9$

Primal Dictionary with original objective is:

x_{14}	0.4	$+1.20x_1$	$-0.40x_2$	$+5.00x_5$	$+9.60x_3$	$+0.40x_{15}$	$-1.60x_6$	$-2.40x_7$	$+3.00x_8$	$-5.60x_9$
x_{11}	59.2	$-10.40x_1$	$-0.20x_2$	$-6.00x_5$	$-12.20x_3$	$-0.80x_{15}$	$-1.80x_6$	$-2.20x_7$	$+2.00x_8$	$-9.80x_9$
x_{12}	47.6	$-1.20x_1$	$-8.60x_2$	$-12.00x_5$	$-4.60x_3$	$+0.60x_{15}$	$+3.60x_6$	$-13.60x_7$	$-7.00x_8$	$+1.60x_9$
x_{13}	46.0	$-9.00x_1$	$+10.00x_2$	$-0.00x_5$	$-8.00x_3$	$-1.00x_{15}$	$-0.00x_6$	$-4.00x_7$	$-0.00x_8$	$-6.00x_9$
x_4	1.1	$+0.30x_1$	$-0.60x_2$	$-0.50x_5$	$+0.40x_3$	$+0.10x_{15}$	$+0.60x_6$	$-0.60x_7$	$-0.50x_8$	$+0.10x_9$
x_{10}	12.9	$+9.70x_1$	$-11.40x_2$	$-5.50x_5$	$-3.40x_3$	$+0.90x_{15}$	$-4.60x_6$	$-13.40x_7$	$-3.50x_8$	$+2.90x_9$
z	3.3	$-0.10x_1$	$-5.80x_2$	$-4.50x_5$	$+4.20x_3$	$+0.30x_{15}$	$-1.20x_6$	$-3.80x_7$	$-4.50x_8$	$+1.30x_9$

1 Optimization Phase Simplex

Starting Dictionary is:

x_{14}	0.4	$+1.20x_1$	$-0.40x_2$	$+5.00x_5$	$+9.60x_3$	$+0.40x_{15}$	$-1.60x_6$	$-2.40x_7$	$+3.00x_8$	$-5.60x_9$
x_{11}	59.2	$-10.40x_1$	$-0.20x_2$	$-6.00x_5$	$-12.20x_3$	$-0.80x_{15}$	$-1.80x_6$	$-2.20x_7$	$+2.00x_8$	$-9.80x_9$
x_{12}	47.6	$-1.20x_1$	$-8.60x_2$	$-12.00x_5$	$-4.60x_3$	$+0.60x_{15}$	$+3.60x_6$	$-13.60x_7$	$-7.00x_8$	$+1.60x_9$
x_{13}	46.0	$-9.00x_1$	$+10.00x_2$	$-0.00x_5$	$-8.00x_3$	$-1.00x_{15}$	$-0.00x_6$	$-4.00x_7$	$-0.00x_8$	$-6.00x_9$
x_4	1.1	$+0.30x_1$	$-0.60x_2$	$-0.50x_5$	$+0.40x_3$	$+0.10x_{15}$	$+0.60x_6$	$-0.60x_7$	$-0.50x_8$	$+0.10x_9$
x_{10}	12.9	$+9.70x_1$	$-11.40x_2$	$-5.50x_5$	$-3.40x_3$	$+0.90x_{15}$	$-4.60x_6$	$-13.40x_7$	$-3.50x_8$	$+2.90x_9$
z	3.3	$-0.10x_1$	$-5.80x_2$	$-4.50x_5$	$+4.20x_3$	$+0.30x_{15}$	$-1.20x_6$	$-3.80x_7$	$-4.50x_8$	$+1.30x_9$

x_3 enters and x_{10} leaves

x_{14}	36.8235294118	$+28.59x_1$	$-32.59x_2$	$-10.53x_5$	$-2.82x_{10}$	$+2.94x_{15}$	$-14.59x_6$	$-40.24x_7$	$-6.88x_8$	$+2.5$
x_{11}	12.9117647059	$-45.21x_1$	$+40.71x_2$	$+13.74x_5$	$+3.59x_{10}$	$-4.03x_{15}$	$+14.71x_6$	$+45.88x_7$	$+14.56x_8$	$-20.$
x_{12}	30.1470588235	$-14.32x_1$	$+6.82x_2$	$-4.56x_5$	$+1.35x_{10}$	$-0.62x_{15}$	$+9.82x_6$	$+4.53x_7$	$-2.26x_8$	-2.3
x_{13}	15.6470588235	$-31.82x_1$	$+36.82x_2$	$+12.94x_5$	$+2.35x_{10}$	$-3.12x_{15}$	$+10.82x_6$	$+27.53x_7$	$+8.24x_8$	$-12.$
x_4	2.61764705882	$+1.44x_1$	$-1.94x_2$	$-1.15x_5$	$-0.12x_{10}$	$+0.21x_{15}$	$+0.06x_6$	$-2.18x_7$	$-0.91x_8$	$+0.4$
x_3	3.79411764706	$+2.85x_1$	$-3.35x_2$	$-1.62x_5$	$-0.29x_{10}$	$+0.26x_{15}$	$-1.35x_6$	$-3.94x_7$	$-1.03x_8$	$+0.8$
z	19.2352941176	$+11.88x_1$	$-19.88x_2$	$-11.29x_5$	$-1.24x_{10}$	$+1.41x_{15}$	$-6.88x_6$	$-20.35x_7$	$-8.82x_8$	$+4.8$

x_1 enters and x_{11} leaves

x_{14}	44.9889394925	$-0.63x_{11} -6.85x_2 -1.84x_5 -0.55x_{10} +0.39x_{15} -5.29x_6 -11.22x_7 +2.32x_8 -10.19x_9$
x_1	0.285621340273	$-0.02x_{11} +0.90x_2 +0.30x_5 +0.08x_{10} -0.09x_{15} +0.33x_6 +1.01x_7 +0.32x_8 -0.45x_9$
x_{12}	26.0559531555	$+0.32x_{11} -6.07x_2 -8.91x_5 +0.22x_{10} +0.66x_{15} +5.16x_6 -10.01x_7 -6.88x_8 +4.08x_9$
x_{13}	6.55757970072	$+0.70x_{11} +8.17x_2 +3.27x_5 -0.17x_{10} -0.28x_{15} +0.47x_6 -4.77x_7 -2.01x_8 +1.40x_9$
x_4	3.02927781392	$-0.03x_{11} -0.64x_2 -0.71x_5 -0.00x_{10} +0.08x_{15} +0.53x_6 -0.71x_7 -0.45x_8 -0.20x_9$
x_3	4.6089785296	$-0.06x_{11} -0.78x_2 -0.75x_5 -0.07x_{10} +0.01x_{15} -0.42x_6 -1.05x_7 -0.11x_8 -0.42x_9$
z	22.6291476903	$-0.26x_{11} -9.18x_2 -7.68x_5 -0.29x_{10} +0.35x_{15} -3.02x_6 -8.29x_7 -5.00x_8 -0.43x_9$

x_{15} enters and x_1 leaves

x_{14}	46.2481751825	$-0.73x_{11} -2.88x_2 -0.50x_5 -0.20x_{10} -4.41x_1 -3.85x_6 -6.74x_7 +3.74x_8 -12.16x_9$
x_{15}	3.20437956204	$-0.25x_{11} +10.10x_2 +3.41x_5 +0.89x_{10} -11.22x_1 +3.65x_6 +11.39x_7 +3.61x_8 -5.01x_9$
x_{12}	28.1678832117	$+0.15x_{11} +0.58x_2 -6.66x_5 +0.80x_{10} -7.39x_1 +7.57x_6 -2.50x_7 -4.50x_8 +0.77x_9$
x_{13}	5.65693430657	$+0.77x_{11} +5.33x_2 +2.31x_5 -0.42x_{10} +3.15x_1 -0.55x_6 -7.97x_7 -3.03x_8 +2.81x_9$
x_4	3.27737226277	$-0.05x_{11} +0.14x_2 -0.45x_5 +0.07x_{10} -0.87x_1 +0.81x_6 +0.17x_7 -0.17x_8 -0.59x_9$
x_3	4.64233576642	$-0.07x_{11} -0.68x_2 -0.72x_5 -0.06x_{10} -0.12x_1 -0.39x_6 -0.93x_7 -0.07x_8 -0.47x_9$
z	23.7591240876	$-0.35x_{11} -5.62x_2 -6.48x_5 +0.02x_{10} -3.96x_1 -1.73x_6 -4.28x_7 -3.72x_8 -2.20x_9$

x_{10} enters and x_{13} leaves

x_{14}	43.5172413793	$-1.10x_{11} -5.45x_2 -1.62x_5 +0.48x_{13} -5.93x_1 -3.59x_6 -2.90x_7 +5.21x_8 -13.52x_9$
x_{15}	15.1034482759	$+1.38x_{11} +21.31x_2 +8.28x_5 -2.10x_{13} -4.59x_1 +2.48x_6 -5.38x_7 -2.76x_8 +0.90x_9$
x_{12}	38.8965517241	$+1.62x_{11} +10.69x_2 -2.28x_5 -1.90x_{13} -1.41x_1 +6.52x_6 -17.62x_7 -10.24x_8 +6.10x_9$
x_{10}	13.3620689655	$+1.83x_{11} +12.59x_2 +5.47x_5 -2.36x_{13} +7.45x_1 -1.31x_6 -18.83x_7 -7.16x_8 +6.64x_9$
x_4	4.15517241379	$+0.07x_{11} +0.97x_2 -0.09x_5 -0.16x_{13} -0.38x_1 +0.72x_6 -1.07x_7 -0.64x_8 -0.16x_9$
x_3	3.86206896552	$-0.17x_{11} -1.41x_2 -1.03x_5 +0.14x_{13} -0.55x_1 -0.31x_6 +0.17x_7 +0.34x_8 -0.86x_9$
z	24.0517241379	$-0.31x_{11} -5.34x_2 -6.36x_5 -0.05x_{13} -3.79x_1 -1.76x_6 -4.69x_7 -3.88x_8 -2.05x_9$

Final Dictionary Solution: 24.0517241379 Num Pivots: 5