```
+1.000000x_1 -3.000000x_2 -2.000000x_3
                                          -2.000000x_5 -3.000000x_6 -2.000000x_7 -3.000000x_8
x_9
   15.0
       -2.000000x_1 -3.000000x_2 +1.000000x_3 +2.000000x_4
                                                           +2.000000x_7 -2.000000x_8
x_{10}
    2.0
       +1.000000x_1 +1.000000x_2 +1.000000x_3 +1.000000x_4
                                                  -3.000000x_6 - 2.000000x_7 + 3.000000x_8
x_{11}
   12.0
       +2.000000x_1 -3.000000x_2
                                                  +1.000000x_6 -3.000000x_7 +3.000000x_8
x_{12}
   10.0
                +2.000000x_2
                                 -1.000000x_4 - 1.000000x_5 + 1.000000x_6 - 1.000000x_7 - 3.000000x_8
x_{13}
    1.0
       +3.000000x_1
                        +3.000000x_3 +1.000000x_4 +2.000000x_5 -3.000000x_6 -3.000000x_7 +3.000000x_8
x_{14}
    2.0
                -3.000000x_2 + 2.000000x_3 - 2.000000x_4 + 2.000000x_5 + 2.000000x_6 - 3.000000x_7
x_{15}
x_{16}
   13.0
       9.0
x_{17}
    2.0
                                 +2.000000x_4 -3.000000x_5 -2.000000x_6
       -1.000000x_1
x_{18}
    1.0
                         -3.000000x_3 + 2.000000x_4 - 2.000000x_5 + 1.000000x_6 + 2.000000x_7 + 1.000000x_8
x_{19}
       -1.000000x_1
   12.0
       x_{20}
                                          -3.000000x_5 -3.000000x_6 +1.000000x_7
   5.0
       -2.000000x_1 + 3.000000x_2 + 3.000000x_3
x_{21}
       14.0
x_{22}
    3.0
       x_{23}
       0.0
```

No initialization required –; Proceed to Optimize.

```
+1.000000x_1 -3.000000x_2 -2.000000x_3
    2.0
                                          -2.000000x_5 -3.000000x_6 -2.000000x_7 -3.000000x_8
x_9
x_{10}
   15.0
       -2.000000x_1 -3.000000x_2 +1.000000x_3 +2.000000x_4
                                                           +2.000000x_7 -2.000000x_8
    2.0
       +1.000000x_1 +1.000000x_2 +1.000000x_3 +1.000000x_4
                                                   -3.000000x_6 - 2.000000x_7 + 3.000000x_8
x_{11}
   12.0
       +2.000000x_1 -3.000000x_2
x_{12}
                                                   +1.000000x_6 -3.000000x_7 +3.000000x_8
   10.0
                +2.000000x_2
                                 -1.000000x_4 - 1.000000x_5 + 1.000000x_6 - 1.000000x_7 - 3.000000x_8
x_{13}
       +3.000000x_1
    1.0
                         +3.000000x_3 + 1.000000x_4 + 2.000000x_5 - 3.000000x_6 - 3.000000x_7 + 3.000000x_8
x_{14}
    2.0
                -3.000000x_2 + 2.000000x_3 - 2.000000x_4 + 2.000000x_5 + 2.000000x_6 - 3.000000x_7
x_{15}
x_{16}
   13.0
       9.0
x_{17}
    2.0
       -1.000000x_1
                                 +2.000000x_4 -3.000000x_5 -2.000000x_6
                                                                    +1.000000x_8
x_{18}
                         -3.000000x_3 + 2.000000x_4 - 2.000000x_5 + 1.000000x_6 + 2.000000x_7 + 1.000000x_8
    1.0
       -1.000000x_1
x_{19}
   12.0
       x_{20}
    5.0
       -2.000000x_1 + 3.000000x_2 + 3.000000x_3
                                          -3.000000x_5 -3.000000x_6 +1.000000x_7
x_{21}
       14.0
x_{22}
    3.0
       x_{23}
       0.0
```

 x_2 enters and x_9 leaves

```
0.666666666667
           +0.333333x_1 -0.3333333x_9 -0.666667x_3
                                     -0.666667x_5 -1.000000x_6 -0.666667x_7 -1.000
x_2
           13.0
x_{10}
   2.66666666667
           x_{11}
x_{12}
     10.0
           +1.000000x_1 +1.000000x_9 +2.000000x_3
                                     +2.000000x_5 +4.000000x_6 -1.000000x_7 +6.000
   11.3333333333
           x_{13}
           +3.000000x_1
                        +3.000000x_3 +1.000000x_4 +2.000000x_5 -3.000000x_6 -3.000000x_7 +3.000
x_{14}
     1.0
           0.0
x_{15}
x_{16}
     15.0
           +2.000000x_1 -1.000000x_9 -3.000000x_3 -1.000000x_4
                                            -2.000000x_6 - 1.000000x_7 - 1.000
           x_{17}
     7.0
     2.0
           -1.000000x_1
                               +2.000000x_4 -3.000000x_5 -2.000000x_6
x_{18}
           -1.000000x_1
                        -3.000000x_3 + 2.000000x_4 - 2.000000x_5 + 1.000000x_6 + 2.000000x_7 + 1.000
     1.0
x_{19}
   11.3333333333
           x_{20}
                                     -5.000000x_5 -6.000000x_6 -1.000000x_7 -3.000
     7.0
           -1.000000x_1 -1.000000x_9 +1.000000x_3
x_{21}
           14.666666667
x_{22}
           3.66666666667
x_{23}
           0.666666666667
```

 x_4 enters and x_{15} leaves

```
0.666666666667
      +0.333333x_1 -0.3333333x_9 -0.666667x_3
                    -0.666667x_5 -1.000000x_6 -0.666667x_7 -1.0000000x_6
x_2
      x_{10}
  13.0
      x_{11}
 2.66666666667
  10.0
      +1.000000x_1 +1.000000x_9 +2.000000x_3
                    x_{12}
 11.3333333333
      x_{13}
   1.0
      x_{14}
      0.0
x_4
x_{16}
  15.0
      7.0
x_{17}
   2.0
      x_{18}
      1.0
x_{19}
 11.3333333333
      x_{20}
   7.0
      -1.000000x_1 -1.000000x_9 +1.000000x_3
                    -5.000000x_5 -6.000000x_6 -1.000000x_7 -3.00
x_{21}
 14.666666667
      x_{22}
 3.66666666667
      x_{23}
 0.66666666667
```

 x_5 enters and x_2 leaves

```
+0.500000x_1 -0.500000x_9 -1.000000x_3
                           -1.500000x_2 - 1.500000x_6 - 1.000000x_7 - 1.500000x_8
  1.0
x_5
     19.0
x_{10}
  4.0
     x_{11}
  12.0
     +2.000000x_1
                           -3.000000x_2 + 1.000000x_6 - 3.000000x_7 + 3.000000x_8
x_{12}
  7.0
     x_{13}
  5.0
     x_{14}
                     -0.500000x_{15} -3.000000x_2 -0.500000x_6 -2.500000x_7 -1.500000x_8
  2.0
     +0.500000x_1 -0.500000x_9
x_4
x_{16}
  13.0
     4.0
x_{17}
x_{18}
  3.0
     3.0
                -1.000000x_3 - 1.000000x_{15} - 3.000000x_2 + 3.000000x_6 - 1.000000x_7 + 1.000000x_8
x_{19}
     -1.000000x_1
  13.0
     -1.000000x_1
                +2.000000x_3 - 0.500000x_{15} - 2.500000x_2 - 2.000000x_6 - 3.500000x_7 - 1.000000x_8
x_{20}
  2.0
     -3.500000x_1 + 1.500000x_9 + 6.000000x_3
                           +7.500000x_2 +1.500000x_6 +4.000000x_7 +4.500000x_8
x_{21}
     14.0
x_{22}
     7.0
x_{23}
     4.0
```

 x_1 enters and x_{21} leaves

```
1.28571428571
                                                                                                                                          -0.142857x_{21} - 0.285714x_9 - 0.142857x_3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -0.428571x_2 -1.285714x_6 -0.428571x_7 -0.88571x_7
  x_5
                                                                                                                                          18.4285714286
x_{10}
                                                                                                                                          x_{11}
                                    4.85714285714
                                    13.1428571429
                                                                                                                                         -0.571429x_{21} + 0.857143x_9 + 3.428571x_3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                +1.285714x_2 +1.857143x_6 -0.714286x_7 +5.8
 x_{12}
                                    6.42857142857
                                                                                                                                         x_{13}
                                     7.57142857143
                                                                                                                                          -1.285714x_{21} + 0.428571x_9 + 8.714286x_3 - 0.500000x_{15} + 3.642857x_2 - 4.571429x_6 - 2.357143x_7 + 4.5x_8 + 2.5x_8 + 2.5x
x_{14}
                                                                                                                                         -0.142857x_{21} - 0.285714x_9 + 0.857143x_3 - 0.500000x_{15} - 1.928571x_2 - 0.285714x_6 - 1.928571x_7 - 0.85714x_8 - 0.85714x_9 - 0.
                                     2.28571428571
  x_4
x_{16}
                                                                                                                                          13.8571428571
                                                                                                                                         1.71428571429
 x_{17}
                                     2.14285714286
                                                                                                                                          +0.428571x_{21} - 0.142857x_9 + 0.428571x_3 - 1.000000x_{15} - 4.714286x_2 + 0.857143x_6 - 3.714286x_7 + 0.8571476x_7 + 
 x_{18}
                                                                                                                                          2.42857142857
 x_{19}
                                    12.4285714286
                                                                                                                                          x_{20}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              +2.142857x_2 +0.428571x_6 +1.142857x_7 +1.5
                                                                                                                                          -0.285714x_{21} + 0.428571x_9 + 1.714286x_3
   x_1
                                 0.571428571429
                                                                                                                                          -0.428571x_{21} + 1.142857x_9 + 3.571429x_3 - 0.500000x_{15} + 4.214286x_2 + 5.142857x_6 - 1.785714x_7 + 3.600000x_{15} + 4.214286x_2 + 5.142857x_6 - 1.785714x_7 + 3.6000000x_{15} + 4.214286x_2 + 5.14286x_2 + 5.1428
x_{22}
                                    14.8571428571
                                                                                                                                         -0.428571x_{21} + 0.142857x_9 + 3.571429x_3 - 1.500000x_{15} - 1.785714x_2 + 4.142857x_6 - 6.785714x_7 + 0.42857x_9 + 0.
  x_{23}
                                    7.85714285714
                                    4.28571428571
                                                                                                                                         z
```

 x_{-1} enters and Final Dictionary Solution: 4.28571428571 Num Pivots: 4