```
x_9
     1.0
         -3.000000x_1 - 3.000000x_2 - 1.000000x_3 - 1.000000x_4
                                                              +1.000000x_6 -2.000000x_7 +3.000000x_8
x_{10}
    4.0
                    x_{11}
x_{12}
    12.0
         -1.000000x_1 -3.000000x_2
                                         -2.000000x_4
                                                              -2.000000x_6 -1.000000x_7 +3.000000x_8
    8.0
         +1.000000x_1 +2.000000x_2 +3.000000x_3 -2.000000x_4 +3.000000x_5
                                                                        +3.000000x_7 -2.000000x_8
x_{13}
    4.0
         -3.000000x_1 + 3.000000x_2
                                         +2.000000x_4 +3.000000x_5 +1.000000x_6 +3.000000x_7 -3.000000x_8
x_{14}
                              +3.000000x_3 +1.000000x_4 -1.000000x_5 +3.000000x_6 -3.000000x_7 +1.000000x_8
    6.0
         -2.000000x_1
x_{15}
x_{16}
    3.0
         +3.0000000x_1
                              -2.000000x_3 - 2.000000x_4 + 3.000000x_5 - 1.000000x_6 - 2.000000x_7 - 1.000000x_8
         -2.000000x_1
                              -2.000000x_3 + 3.000000x_4 + 2.000000x_5 + 2.000000x_6 + 1.000000x_7 + 3.000000x_8
    5.0
x_{17}
    7.0
         x_{18}
         -3.000000x_1 + 3.000000x_2 + 2.000000x_3 + 3.000000x_4
                                                              +3.000000x_6 -1.000000x_7 +1.000000x_8
x_{19}
    2.0
         +3.000000x_1 -1.000000x_2 -2.000000x_3
                                                   +1.000000x_5 -2.000000x_6 +3.000000x_7 -2.000000x_8
    11.0
x_{20}
         7.0
x_{21}
                                                                                   +3.000000x_8
    14.0
                    +2.000000x_2 +3.000000x_3
                                                              -2.000000x_6 + 1.000000x_7 + 3.000000x_8
x_{22}
    1.0
         -3.000000x_1 + 3.000000x_2 + 3.000000x_3
                                                              -3.000000x_6 +3.000000x_7 -3.000000x_8
x_{23}
    0.0
                                                   -1.000000x_5
                    +1.000000x_2 -1.000000x_3
                                                                                   -1.000000x_8
 z
```

No initialization required –; Proceed to Optimize.

```
7.0
           -1.000000x_1 + 3.000000x_2 + 1.000000x_3 - 1.000000x_4 + 2.000000x_5 + 3.000000x_6 + 1.000000x_7 + 2.000000x_8
x_9
x_{10}
      1.0
           -3.000000x_1 - 3.000000x_2 - 1.000000x_3 - 1.000000x_4
                                                                             +1.000000x_6 -2.000000x_7 +3.000000x_8
      4.0
                         -1.000000x_2 - 1.000000x_3 - 2.000000x_4 - 3.000000x_5 + 1.000000x_6 + 2.000000x_7 - 1.000000x_8
x_{11}
     12.0
x_{12}
           -1.000000x_1 -3.000000x_2
                                                   -2.000000x_4
                                                                             -2.000000x_6 - 1.000000x_7 + 3.000000x_8
      8.0
           +1.000000x_1 +2.000000x_2 +3.000000x_3 -2.000000x_4 +3.000000x_5
                                                                                          +3.000000x_7 - 2.000000x_8
x_{13}
      4.0
           -3.000000x_1 + 3.000000x_2
                                                   +2.000000x_4 +3.000000x_5 +1.000000x_6 +3.000000x_7 -3.000000x_8
x_{14}
      6.0
           -2.000000x_1
                                      +3.000000x_3 +1.000000x_4 -1.000000x_5 +3.000000x_6 -3.000000x_7 +1.000000x_8
x_{15}
      3.0
           +3.000000x_1
                                      -2.000000x_3 - 2.000000x_4 + 3.000000x_5 - 1.000000x_6 - 2.000000x_7 - 1.000000x_8
x_{16}
      5.0
           -2.000000x_1
                                      -2.000000x_3 + 3.000000x_4 + 2.000000x_5 + 2.000000x_6 + 1.000000x_7 + 3.000000x_8
x_{17}
      7.0
           x_{18}
      2.0
           -3.000000x_1 + 3.000000x_2 + 2.000000x_3 + 3.000000x_4
                                                                             +3.000000x_6 -1.000000x_7 +1.000000x_8
x_{19}
     11.0
           +3.000000x_1 -1.000000x_2 -2.000000x_3
                                                                +1.000000x_5 -2.000000x_6 +3.000000x_7 -2.000000x_8
x_{20}
      7.0
            -3.000000x_1 + 2.000000x_2 - 1.000000x_3 - 2.000000x_4 + 2.000000x_5 - 2.000000x_6
                                                                                                       +3.000000x_8
x_{21}
     14.0
                                                                             -2.000000x_6 + 1.000000x_7 + 3.000000x_8
                        +2.000000x_2 +3.000000x_3
x_{22}
      1.0
           -3.000000x_1 + 3.000000x_2 + 3.000000x_3
                                                                             -3.000000x_6 + 3.000000x_7 - 3.000000x_8
x_{23}
     0.0
                         +1.000000x_2 -1.000000x_3
                                                                -1.000000x_5
                                                                                                       -1.000000x_8
```

 $x_2$  enters and  $x_{10}$  leaves

```
8.0
             -4.000000x_1 - 1.000000x_{10}
                                     x_9
             -1.000000x_1 - 0.333333x_{10} - 0.333333x_3 - 0.333333x_4
   0.333333333333
                                                    +0.333333x_6 -0.666667x_7 +1.00
x_2
   3.6666666667
             x_{11}
x_{12}
      11.0
             +2.000000x_1 +1.000000x_{10} +1.000000x_3 -1.000000x_4
                                                    -3.000000x_6 + 1.000000x_7
   8.6666666667
             x_{13}
             -6.000000x_1 - 1.000000x_{10} - 1.000000x_3 + 1.000000x_4 + 3.000000x_5 + 2.000000x_6 + 1.000000x_7
x_{14}
      5.0
                             6.0
             -2.000000x_1
x_{15}
x_{16}
      3.0
             +3.000000x_1
                             x_{17}
      5.0
             -2.000000x_1
   7.33333333333
             x_{18}
             -6.000000x_1 - 1.000000x_{10} + 1.000000x_3 + 2.000000x_4
                                                    +4.000000x_6 -3.000000x_7 +4.00
x_{19}
      3.0
   10.666666667
             x_{20}
             7.6666666667
x_{21}
   14.666666667
             -2.000000x_1 -0.666667x_{10} +2.333333x_3 -0.666667x_4
                                                    -1.3333333x_6 -0.3333333x_7 +5.00
x_{22}
      2.0
             -6.000000x_1 - 1.000000x_{10} + 2.000000x_3 - 1.000000x_4
                                                    -2.000000x_6 + 1.000000x_7
x_{23}
             -1.000000x_1 - 0.333333x_{10} - 1.333333x_3 - 0.333333x_4 - 1.000000x_5 + 0.333333x_6 - 0.666667x_7
   0.333333333333
z
```

 $x_6$  enters and  $x_{23}$  leaves

```
12.0
             x_9
   0.666666666667
             -2.000000x_1 -0.500000x_{10}
                                    -0.500000x_4
                                                  -0.166667x_{23} -0.500000x_7 +1.0
x_2
                                    x_{11}
   4.33333333333
             -1.000000x_1 -0.000000x_{10}
x_{12}
      8.0
             +11.000000x_1 +2.500000x_{10} -2.000000x_3 +0.500000x_4
                                                  +1.500000x_{23} - 0.500000x_7
   9.33333333333
             x_{13}
      7.0
             -12.000000x_1 - 2.000000x_{10} + 1.0000000x_3
                                           +3.000000x_5 -1.000000x_{23} +2.000000x_7
x_{14}
             9.0
x_{15}
x_{16}
      2.0
             7.0
             -8.000000x_1 -1.000000x_{10}
x_{17}
   10.6666666667
             x_{18}
             -18.000000x_1 -3.000000x_{10} +5.0000000x_3
                                                  -2.000000x_{23} - 1.000000x_7 + 4.0
      7.0
x_{19}
             8.33333333333
x_{20}
   6.33333333333
             x_{21}
   13.3333333333
             +2.000000x_1 +0.000000x_{10} +1.000000x_3 +0.000000x_4
                                                  +0.666667x_{23} -1.000000x_7 +5.0
x_{22}
             -3.000000x_1 -0.500000x_{10} + 1.000000x_3 - 0.500000x_4
                                                  -0.500000x_{23} + 0.500000x_7
x_6
      1.0
   0.66666666667
             -2.000000x_1 -0.500000x_{10} -1.000000x_3 -0.500000x_4 -1.000000x_5 -0.166667x_{23} -0.500000x_7
z
```

 $x_{-1}$  enters and Final Dictionary Solution: 0.66666666667 Num Pivots: 2