```
-3.000000x_1 + 3.000000x_2 + 3.000000x_3 + 1.000000x_4
                                          x_{15}
      12.0
x_{16}
   13.0
                                   +3.000000x_1 -3.000000x_2 +1.000000x_3
x_{17}
x_{18}
   1.0
      -1.000000x_1 + 1.000000x_2 + 2.000000x_3 + 2.000000x_4 + 2.000000x_5 - 1.000000x_6
                                                        +2.000000x_8 -3.00
      11.0
      +2.000000x_1 +2.000000x_2 +2.000000x_3
                                   +1.000000x_5 +1.000000x_6 +1.000000x_7 -2.000000x_8
x_{20}
                                                               +3.00
      +3.000000x_1 -3.000000x_2 -3.000000x_3 +2.000000x_4 -2.000000x_5
   14.0
x_{21}
                                                                -3.00
   10.0
      +2.000000x_1 -2.000000x_2 -3.000000x_3
                                   -1.000000x_5
                                                 +3.000000x_7
x_{22}
      1.0
x_{23}
   11.0
      -3.0000000x_1 + 3.0000000x_2 + 1.0000000x_3 - 3.0000000x_4 - 3.0000000x_5 + 2.0000000x_6 - 3.0000000x_7
x_{24}
      -3.000000x_1 -1.000000x_2 +3.000000x_3 -3.000000x_4
                                          +3.000000x_6 -3.000000x_7 -3.000000x_8 -2.00
x_{25}
   15.0
                                   +1.000000x_5
                                                 -1.000000x_7 -1.000000x_8
   14.0
      +2.000000x_1 +1.000000x_2 -3.000000x_3
x_{26}
      2.0
      13.0
x_{28}
   12.0
      x_{29}
                                          0.0
             +2.000000x_2
```

No initialization required –; Proceed to Optimize.

```
6.0
     -3.000000x_1 + 3.000000x_2 + 3.000000x_3 + 1.000000x_4
                                 x_{15}
x_{16}
  12.0
     13.0
     +3.000000x_1 -3.000000x_2 +1.000000x_3
                           x_{17}
     -1.000000x_1 + 1.000000x_2 + 2.000000x_3 + 2.000000x_4 + 2.000000x_5 - 1.000000x_6
  1.0
                                            +2.000000x_8 -3.00
x_{18}
     11.0
x_{19}
  11.0
     +2.000000x_1 +2.000000x_2 +2.000000x_3
                           x_{20}
     +3.000000x_1 -3.000000x_2 -3.000000x_3 +2.000000x_4 -2.000000x_5
  14.0
                                                 +3.00
x_{21}
  10.0
    +2.000000x_1 - 2.000000x_2 - 3.000000x_3
                           -1.000000x_5
                                      +3.000000x_7
                                                  -3.00
x_{22}
     1.0
     11.0
x_{24}
     -3.000000x_1 - 1.000000x_2 + 3.000000x_3 - 3.000000x_4
                                 15.0
x_{25}
  14.0
     +2.000000x_1 +1.000000x_2 -3.000000x_3
                                      -1.000000x_7 -1.000000x_8
                           +1.000000x_5
  2.0
     x_{27}
    13.0
x_{28}
  12.0
     x_{29}
  0.0
          +2.000000x_2
```

 $x_2$  enters and  $x_{27}$  leaves

```
-6.000000x_1 - 3.000000x_{27} + 6.000000x_3 - 5.000000x_4 - 3.000000x_5 + 8.000000x_6
x_{15}
    10.0
x_{16}
  7.0
    x_{17}
x_{18}
  3.0
    -2.000000x_1 - 1.000000x_{27} + 3.000000x_3
                      +1.000000x_5 +1.000000x_6 -1.000000x_7 +1.000000x_8 -2.0
  9.0
    x_{19}
 15.0
        -2.0000000x_{27} + 4.000000x_3 - 4.000000x_4 - 1.000000x_5 + 5.000000x_6 - 1.000000x_7 - 4.000000x_8
x_{20}
    8.0
x_{21}
  6.0
    x_{22}
    7.0
x_{23}
x_{24}
 17.0
    x_{25}
 13.0
    +1.000000x_1 -1.000000x_{27} -2.000000x_3 -2.000000x_4
                          16.0
x_{26}
    2.0
x_2
 19.0
    -1.000000x_1 - 3.000000x_2 + 1.000000x_3 - 8.000000x_4 - 1.000000x_5 + 7.000000x_6
x_{28}
 10.0
        x_{29}
    4.0
```

 $x_3$  enters and  $x_{22}$  leaves

```
19.2
   x_{15}
 6.4
   x_{16}
   x_{17}
 4.6
 6.6
   +0.400000x_1 +0.200000x_{27} -0.600000x_{22} +2.400000x_4 +1.600000x_5 -1.400000x_6 +2.000000x_7 +2.200000x_8 -5
x_{18}
   11.4
 19.8
   x_{20}
 0.8
   x_{21}
x_3
 1.2
   8.2
   x_{23}
 21.8
   x_{24}
 15.4
   -0.400000x_1 + 1.800000x_{27} - 0.400000x_{22} + 0.600000x_4 + 1.400000x_5 - 0.600000x_6
                                  -1.200000x_8-5
x_{25}
 13.6
   x_{26}
   -0.200000x_1 - 0.600000x_{27} - 0.2000000x_{22} - 1.200000x_4 - 0.800000x_5 + 1.200000x_6
 3.2
x_2
                                  -0.600000x_8
   20.2
x_{28}
   +1.600000x_1 + 1.800000x_{27} - 0.400000x_{22} + 4.600000x_4 + 4.400000x_5 - 0.600000x_6
                                  +3.800000x_8-5
x_{29}
 12.4
 6.4
```

 $x_6$  enters and  $x_{21}$  leaves

```
21.3333333333
               x_{15}
    8.66666666667
               x_{16}
               +2.000000x_1 + 1.000000x_{27} - 2.000000x_{22} - 2.000000x_4 + 2.000000x_5 + 2.000000x_{21} + 5.000000x_7
       3.0
x_{17}
x_{18}
    5.66666666667
               -1.000000x_1 - 0.500000x_{27} - 2.000000x_{22} - 1.333333x_4 + 1.833333x_5 + 1.166667x_{21} + 5.500000x_7 +
               7.0
x_{19}
       21.0
               +5.000000x_1 + 0.500000x_{27} + 1.000000x_{22} + 4.000000x_4 - 0.500000x_5 - 1.500000x_{21} - 1.500000x_7
x_{20}
   0.666666666667
               x_6
x_3
   0.66666666667
                                 -1.000000x_{22} -1.333333x_4 +0.333333x_5 +0.666667x_{21} +3.000000x_7
               +5.000000x_1 + 1.500000x_{27} + 8.000000x_{22} + 15.666667x_4 - 7.166667x_5 - 6.833333x_{21} - 25.500000x_7 +
    13.666666667
x_{23}
       25.0
               x_{24}
               -1.000000x_1 + 1.500000x_{27} - 1.000000x_{22} - 1.000000x_4 + 1.500000x_5 + 0.500000x_{21} + 1.500000x_7
       15.0
x_{25}
       16.0
               +3.000000x_1
                                 +4.000000x_{22} +6.000000x_4 -1.000000x_5 -3.000000x_{21} -13.000000x_7 -
x_{26}
       4.0
               +1.000000x_1
                                 +1.000000x_{22} +2.000000x_4 -1.000000x_5 -1.000000x_{21} -3.000000x_7
x_2
    24.3333333333
               x_{28}
               +1.000000x_1 + 1.500000x_{27} - 1.000000x_{22} + 3.000000x_4 + 4.500000x_5 + 0.500000x_{21} + 1.500000x_7 +
       12.0
x_{29}
               9.33333333333
z
```

 $x_1$  enters and  $x_{18}$  leaves

```
32.6666666667
                                                                                        -2.000000x_{22} + 5.666667x_4 + 1.333333x_5 - 0.333333x_{21} + 9.000000x_7
                                        -2.000000x_{18}
x_{15}
                   37.0
                                        x_{16}
x_{17}
          14.3333333333
                                        -2.000000x_{18}
                                                                                        -6.000000x_{22} -4.666667x_4 +5.666667x_5 +4.333333x_{21} +16.000000x_7
x_1
          5.66666666667
                                        -1.000000x_{18} - 0.500000x_{27} - 2.000000x_{22} - 1.333333x_4 + 1.833333x_5 + 1.166667x_{21} + 5.500000x_7
          1.33333333333
                                        x_{19}
          49.3333333333
                                        x_{20}
          6.33333333333
                                        -1.000000x_{18}
                                                                                        -1.000000x_{22} +1.333333x_4 +1.666667x_5 +0.333333x_{21} +3.000000x_7
x_6
x_3
         0.66666666667
                                                                                        -1.000000x_{22} -1.333333x_4 +0.333333x_5 +0.666667x_{21} +3.000000x_7
                   42.0
                                        x_{23}
          36.3333333333
                                                                                        +0.000000x_{22} +4.333333x_4 -2.333333x_5 -1.666667x_{21} -3.000000x_7
x_{24}
          9.33333333333
                                        x_{25}
                   33.0
                                        x_{26}
          9.6666666667
                                        -1.000000x_{18} - 0.500000x_{27} - 1.000000x_{22} + 0.666667x_4 + 0.833333x_5 + 0.166667x_{21} + 2.500000x_{7}
x_2
x_{28}
          58.3333333333
                                        -6.000000x_{18} - 2.500000x_{27} - 6.000000x_{22} + 1.333333x_4 + 9.166667x_5 + 1.833333x_{21} + 18.500000x_{7} + 1.833333x_{11} + 18.500000x_{11} + 1.833333x_{12} + 1.833333x_{13} + 1.833333x_{14} + 1.833333x_{14} + 1.833333x_{14} + 1.833333x_{15} + 1.83333x_{15} + 1.8333x_{15} + 1.8333x_{15} + 1.833x_{15} + 1.83x_{15} + 1.8x_{15} + 1.8x_{15}
          17.6666666667
                                        x_{29}
                   32.0
                                        z
```

 $x_4$  enters and  $x_{19}$  leaves

```
33.375
                                                                                                                                                             -1.468750x_{18} - 0.531250x_{27} - 4.656250x_{22} - 0.531250x_{19} + 0.625000x_5 + 1.968750x_{21} + 15.375000x_7 + 6.468750x_{22} + 0.531250x_{23} + 0.531250x_{24} + 0.531250x_{25} + 0.531250
x_{15}
                                                              37.625
                                                                                                                                                               -4.531250x_{18} - 1.468750x_{27} - 8.343750x_{22} - 0.468750x_{19} + 9.375000x_5 + 5.031250x_{21} + 19.625000x_7 + 9.531250x_{21} + 19.625000x_7 + 9.531250x_7 + 9.53120x_7 + 9.53120x_7 + 9.53120x_7 + 9.53120x_7 + 9.531
x_{16}
                                                                    13.75
                                                                                                                                                               -2.437500x_{18} + 0.437500x_{27} - 3.812500x_{22} + 0.437500x_{19} + 6.250000x_5 + 2.437500x_{21} + 10.750000x_7 + 3.437500x_7 + 3.437500x_{21} + 10.750000x_7 + 3.437500x_7 + 3.437
x_{17}
                                                                               5.5
                                                                                                                                                               x_1
                                                                    0.125
                                                                                                                                                               x_4
                                                                           49.0
                                                                                                                                                               x_{20}
                                                                                 6.5
                                                                                                                                                               x_6
   x_3
                                                                                 0.5
                                                                                                                                                               -4.156250x_{18} - 1.843750x_{27} - 6.218750x_{22} - 0.843750x_{19} + 0.875000x_5 + 2.656250x_{21} + 12.125000x_7 + 9.156250x_{19} + 0.0000x_7 + 0.00
 x_{23}
                                                                  43.125
                                                                36.875
                                                                                                                                                               -1.593750x_{18} - 0.406250x_{27} - 2.031250x_{22} - 0.406250x_{19} - 2.875000x_5 + 0.093750x_{21} + 1.875000x_7 + 3.593750x_{22} + 0.093750x_{23} + 0.093750x_{24} + 0.093750x_{25} + 0.0000x_{25} +
x_{24}
                                                                    9.375
                                                                                                                                                               +1.031250x_{18} + 1.968750x_{27} + 0.843750x_{22} - 0.031250x_{19} - 0.375000x_5 - 0.531250x_{21} - 3.625000x_7 - 3.031250x_{22} - 0.031250x_{23} - 0.031250x_{24} - 0.031250x_{25} - 0.031250x
   x_{25}
                                                                      33.25
                                                                                                                                                               x_{26}
                                                                           9.75
                                                                                                                                                               -0.937500x_{18} - 0.562500x_{27} - 1.312500x_{22} - 0.062500x_{19} + 0.750000x_5 + 0.437500x_{21} + 3.250000x_7 + 1.437500x_{22} + 0.062500x_{23} + 0.0625000x_{24} + 0.0625000x_{25} + 0.0625
     x_2
                                                                           58.5
                                                                                                                                                               -5.875000x_{18} - 2.625000x_{27} - 6.625000x_{22} - 0.125000x_{19} + 9.000000x_5 + 2.375000x_{21} + 20.000000x_7 + 12.375000x_7 + 12.375000x_8 + 2.375000x_{21} + 20.0000000x_7 + 12.375000x_8 + 2.375000x_8 + 2.3750000x_8 + 2.3750000x_8 + 2.3750000x_8 + 
   x_{28}
                                                                  17.875
                                                                                                                                                               -0.843750x_{18} + 0.843750x_{27} - 3.781250x_{22} - 0.156250x_{19} + 6.125000x_5 + 2.343750x_{21} + 8.875000x_7 + 4.843750x_{22} + 4.843750x_{23} + 4.843750x_{24} + 4.843750x_{25} + 4.843750x
   x_{29}
                                                                           32.5
                                                                                                                                                               -3.625000x_{18} - 1.375000x_{27} - 5.875000x_{22} - 0.375000x_{19} + 4.500000x_5 + 2.625000x_{21} + 14.500000x_7 + 5.625000x_7 + 5.625000x_7
```

 $x_5$  enters and  $x_4$  leaves

```
34.0
x_{15}
x_{16}
 47.0
  x_{17}
 20.0
 7.5
  x_1
  1.0
x_5
 58.0
  x_{20}
 8.0
  x_6
x_3
 1.0
  +0.250000x_{18} - 0.250000x_{27} - 2.250000x_{22} - 0.250000x_{19} - 4.000000x_4 + 1.750000x_{21}
                     +6.000000x_7 -0.2500
  44.0
x_{23}
 34.0
  x_{24}
 9.0
  +0.750000x_{18} + 2.250000x_{27} + 2.250000x_{22} + 0.250000x_{19} + 3.000000x_4 - 1.750000x_{21}
                     -7.0000000x_7 -2.7500
x_{25}
 37.5
  x_{26}
  x_2
 10.5
 67.5
  x_{28}
  x_{29}
 24.0
 37.0
  z
```

 $x_7$  enters and  $x_{25}$  leaves

```
61.0
                                                                                                                                                                                                                  +1.250000x_{18} +5.750000x_{27} -0.250000x_{22} -0.250000x_{19} +4.000000x_4 -1.250000x_{21} -3.000000x_4
x_{15}
                                                                                                                                                                                                             +13.642857x_{18} + 24.928571x_{27} - 10.071429x_{22} - 3.785714x_{19} - 30.428571x_4 + 9.500000x_{21} - 14.857143x_{22} - 3.785714x_{23} - 3.0428571x_4 + 9.5000000x_{21} - 14.857143x_{22} - 3.0428571x_{23} - 3.0428571x_{24} - 3.0428571x_{25} - 3.042871x_{25} - 3.04
 x_{16}
                                                      180.714285714
                                                                                                                                                                                                                  106.142857143
 x_{17}
    x_1
                                                     35.7857142857
                                                                                                                                                                                                                  +2.732143x_{18} +5.196429x_{27} -1.803571x_{22} -0.589286x_{19} -6.571429x_4 +1.625000x_{21} -3.142857x_4
                                                                                                                                                                                                                  +1.714286x_{18} +2.142857x_{27} -0.857143x_{22} -0.428571x_{19} -4.142857x_4 +1.000000x_{21} -1.285714x_{22} -0.428571x_{23} -0.428571x_{24} +1.0000000x_{21} -1.285714x_{23} -0.428571x_{24} -0.428571x_{25} -0.428571x_{25
                                                     12.5714285714
      x_5
                                                                                                                                                                                                             +12.642857x_{18} + 24.928571x_{27} - 8.071429x_{22} - 2.785714x_{19} - 27.428571x_4 + 6.500000x_{21} - 14.857143x_{22} - 2.785714x_{23} - 2.785714x_{24} + 6.500000x_{21} - 14.857143x_{22} - 2.785714x_{23} - 2.785714x_{24} + 6.5000000x_{21} - 14.857143x_{22} - 2.785714x_{23} - 2.785714x_{24} + 6.5000000x_{21} - 14.857143x_{22} - 2.785714x_{23} - 2.785714x_{24} + 6.5000000x_{21} - 14.857143x_{22} - 2.785714x_{23} - 2.785714x_{2
                                                     191.714285714
    x_{20}
                                                                                                                                                                                                                  31.1428571429
      x_6
    x_3
                                                     8.71428571429
                                                                                                                                                                                                                  69.7142857143
   x_{23}
                                                                                                                                                                                                                  -6.321429x_{18} \quad -5.964286x_{27} \quad +1.035714x_{22} \quad +0.892857x_{19} \\ +12.714286x_4 \\ -3.250000x_{21} \quad +3.428571x_{22} \\ +3.428571x_{23} \quad +3.428571x_{24} \\ +3.428571x_{25} \quad +3.428571x_{25} \\ +3.428571x_{
                                                   3.14285714286
 x_{24}
                                                                                                                                                                                                                  1.28571428571
    x_7
                                                                                                                                                                                                                  +5.089286x_{18} \\ +9.267857x_{27} \\ -4.732143x_{22} \\ -1.803571x_{19} \\ -15.142857x_4 \\ +4.125000x_{21} \\ -6.285714x_{22} \\ -6.285714x_{21} \\ -6.285714x_{22} \\ -6.285714x_{23} \\ -6.285714x_{
                                                   94.0714285714
    x_{26}
                                                                                                                                                                                                                  x_2
                                                     23.3571428571
                                                     197.357142857
                                                                                                                                                                                                             +11.696429x_{18} + 23.089286x_{27} - 7.910714x_{22} - 3.267857x_{19} - 28.714286x_4 + 6.375000x_{21} - 14.428571x_{22} - 3.267857x_{23} - 28.714286x_{23} + 6.375000x_{23} + 6.375000x_{
   x_{28}
                                                                                                                                                                                                             +10.607143x_{18} + 16.821429x_{27} - 6.178571x_{22} - 2.464286x_{19} - 21.571429x_4 + 6.250000x_{21} - 9.142857x_{22} - 2.464286x_{23} - 2.464286x_{24} - 2.464286x_{25} - 2.4
                                                     106.285714286
    x_{29}
                                                     107.714285714
                                                                                                                                                                                                                  +5.642857x_{18} +12.928571x_{27} -5.071429x_{22} -1.785714x_{19} -12.428571x_4 +3.500000x_{21} -7.857143x_{22} -1.785714x_{23} -1.785714x_{24} -1.785714x_{25} -1.785714x_{2
              z
```

 $x_{11}$  enters and  $x_{24}$  leaves

```
65.2334384858
x_{15}
                                             197.410094637
                                                                                                                                                                                      -19.938486x_{18} - 6.755521x_{27} - 4.569401x_{22} + 0.957413x_{19} + 37.113565x_4 - 7.764984x_{21} + 3.356467x_{25}
x_{16}
 x_{17}
                                             117.088328076
                                                                                                                                                                                     -12.586751x_{18} - 3.485804x_{27} - 2.107256x_{22} + 1.252366x_{19} + 22.993691x_4 - 5.318612x_{21} + 2.369085x_{25} + 2.36085x_{25} + 2.36085x_{25} + 2.36085x_{25} + 2.36085x_{25} + 2.36085x_{25} + 2.36085x_
  x_1
                                            39.2507886435
                                                                                                                                                                                         -4.237382x_{18} -1.379338x_{27} -0.661672x_{22} +0.395110x_{19} +7.446372x_4 -1.958202x_{21} +0.637224x_{25}
                                                  13.880126183
                                                                                                                                                                                         x_5
                                             208.826498423
                                                                                                                                                                                      -21.776025x_{18} - 7.545741x_{27} - 2.432177x_{22} + 2.075710x_{19} + 41.798107x_4 - 11.195584x_{21} + 3.810726x_{25} + 2.075710x_{19} + 41.798107x_4 - 11.195584x_{21} + 3.810726x_{25} + 2.075710x_{19} + 41.798107x_4 - 11.195584x_{21} + 3.810726x_{25} + 2.075710x_{25} + 2.075
  x_{20}
                                                                                                                                                                                         -3.783912x_{18} -1.089905x_{27} -0.487382x_{22} +0.235016x_{19} +7.706625x_4 -1.815457x_{21} +0.662461x_{25}
                                             34.1072555205
    x_6
  x_3
                                                                                                                                                                                         -1.280757x_{18} -0.372240x_{27} + 0.034700x_{22} + 0.271293x_{19} + 2.943218x_4 -0.867508x_{21} + 0.321767x_{25}
                                            9.79495268139
                                             73.5015772871
                                                                                                                                                                                         -8.974763x_{18} -3.258675x_{27} -1.823344x_{22} +0.290221x_{19} +16.892744x_4 -3.416404x_{21} +1.274448x_{25}
 x_{23}
                                            0.13880126183
                                                                                                                                                                                         -0.279180x_{18} -0.263407x_{27} +0.045741x_{22} +0.039432x_{19} +0.561514x_4 -0.143533x_{21} +0.151420x_{25} +0.039432x_{19} +0.03942x_{19} +0.03944x_{19} +0.0
 x_{11}
                                                                                                                                                                                         1.45425867508
  x_7
                                            100.966876972
                                                                                                                                                                                         -8.779968x_{18} -3.817823x_{27} -2.459779x_{22} +0.155363x_{19} +12.752366x_4 -3.005521x_{21} +1.236593x_{25} +1.236576x_{25} +1.236576x_{25} +1.23676x_{25} +1.23676x
  x_{26}
                                                                                                                                                                                         -2.623817x_{18} -1.043375x_{27} -0.366719x_{22} +0.201104x_{19} +4.963722x_4 -1.332019x_{21} +0.372240x_{25}
    x_2
                                             25.0078864353
                                            213.443217666
                                                                                                                                                                                     -20.658517x_{18} - 7.437697x_{27} - 2.609621x_{22} + 1.302050x_{19} + 36.361199x_4 - 10.259464x_{21} + 3.119874x_{25} + 3.1
 x_{28}
                                                                                                                                                                                     -10.670347x_{18} - 3.253943x_{27} - 2.692429x_{22} + 0.541009x_{19} + 21.223975x_4 - 4.689274x_{21} + 2.397476x_{25} + 2.39
  x_{29}
                                             116.864353312
                                                  117.05362776
                                                                                                                                                                                      -13.141956x_{18} - 4.794953x_{27} - 1.993691x_{22} + 0.867508x_{19} + 25.353312x_4 - 6.157729x_{21} + 2.331230x_{25} + 2.33120x_{25} + 2.33120x_
           z
```

 $x_4$  enters and Unbounded Dictionary!