```
3.0
        x_8
    6.0
                 -1.000000x_2 + 2.000000x_3 + 1.000000x_4 - 1.000000x_5 + 1.000000x_6 + 3.000000x_7
x_9
    3.0
        x_{10}
x_{11}
    15.0
        -3.000000x_1 - 2.000000x_2 + 1.000000x_3
   11.0
                                                    +3.000000x_6 -3.000000x_7
x_{12}
    14.0
        x_{13}
    4.0
        -1.000000x_1 - 1.000000x_2 - 3.000000x_3 - 2.000000x_4 + 1.000000x_5
                                                              -2.000000x_7
x_{14}
x_{15}
    8.0
                          +3.000000x_3 +1.000000x_4 -2.000000x_5 -1.000000x_6 +3.000000x_7
                                   -1.000000x_4 - 1.000000x_5 - 1.000000x_6 + 1.000000x_7
    8.0
        +1.000000x_1 +1.000000x_2
x_{16}
x_{1\underline{7}}
    1.0
        +2.000000x_1 +3.000000x_2 -2.000000x_3 +3.000000x_4
                                                     -2.000000x_6 + 3.000000x_7
    0.0
        +2.000000x_1 +1.000000x_2
z
                                   +2.000000x_4 +2.000000x_5 -2.000000x_6
```

No initialization required –; Proceed to Optimize.

```
x_8
    3.0
         +1.000000x_1 + 3.000000x_2 - 2.000000x_3 + 1.000000x_4 - 1.000000x_5 + 2.000000x_6 - 1.000000x_7
    6.0
                   -1.000000x_2 + 2.000000x_3 + 1.000000x_4 - 1.000000x_5 + 1.000000x_6 + 3.000000x_7
x_9
    3.0
         x_{10}
    15.0
         x_{11}
x_{12}
    11.0
         -3.000000x_1 - 2.000000x_2 + 1.000000x_3
                                                           +3.000000x_6 -3.000000x_7
         14.0
x_{13}
    4.0
         -1.000000x_1 - 1.000000x_2 - 3.000000x_3 - 2.000000x_4 + 1.000000x_5
x_{14}
    8.0
         -1.000000x_1
                             +3.000000x_3 +1.000000x_4 -2.000000x_5 -1.000000x_6 +3.000000x_7
x_{15}
    8.0
x_{16}
         +1.000000x_1 +1.000000x_2
                                       -1.000000x_4 - 1.000000x_5 - 1.000000x_6 + 1.000000x_7
         +2.000000x_1 +3.000000x_2 -2.000000x_3 +3.000000x_4
                                                           -2.000000x_6 + 3.000000x_7
    1.0
x_{17}
    0.0
         +2.000000x_1 +1.000000x_2
                                       +2.000000x_4 +2.000000x_5 -2.000000x_6
z
```

 $x_1$  enters and  $x_{10}$  leaves

```
4.5
         -0.500000x_{10} + 4.500000x_2 - 1.000000x_3
                                                  -2.000000x_5 +3.000000x_6 -1.500000x_7
x_8
    6.0
                    -1.000000x_2 + 2.000000x_3 + 1.000000x_4 - 1.000000x_5 + 1.000000x_6 + 3.000000x_7
x_9
    1.5
         x_1
x_{11}
    16.5
         -0.500000x_{10} + 0.5000000x_2 - 2.0000000x_3 - 4.0000000x_4
                                                            +2.000000x_6 + 1.500000x_7
    6.5
         +1.500000x_{10} -6.500000x_2 -2.000000x_3 +3.000000x_4 +3.000000x_5
                                                                       -1.500000x_7
x_{12}
    9.5
         +1.500000x_{10} -5.500000x_2 -6.000000x_3
                                                  +2.000000x_5
                                                                       -0.500000x_7
x_{13}
    2.5
         x_{14}
    6.5
         x_{15}
         -0.500000x_{10} + 2.500000x_2 + 1.000000x_3 - 2.000000x_4 - 2.000000x_5
    9.5
                                                                      +0.500000x_7
x_{16}
    4.0
                                        +1.0000000x_4 -2.000000x_5
                                                                       +2.000000x_7
         -1.000000x_{10} + 6.000000x_2
x_{17}
         -1.000000x_{10} + 4.000000x_2 + 2.000000x_3
    3.0
                                                                       -1.000000x_7
```

 $x_2$  enters and  $x_{12}$  leaves

```
+0.538462x_{10} - 0.692308x_{12} - 2.384615x_3 + 2.076923x_4 + 0.076923x_5 + 3.000000x_6 - 2.538462x_7
    9.0
x_8
    5.0
        x_9
    3.0
        x_1
    17.0
        -0.384615x_{10} - 0.076923x_{12} - 2.153846x_3 - 3.769231x_4 + 0.230769x_5 + 2.000000x_6 + 1.384615x_7
x_{11}
    1.0
        +0.230769x_{10} -0.153846x_{12} -0.307692x_3 +0.461538x_4 +0.461538x_5
                                                                 -0.230769x_7
x_2
        +0.230769x_{10} +0.846154x_{12} -4.307692x_3 -2.538462x_4 -0.538462x_5
                                                                 +0.769231x_7
x_{13}
    4.0
    0.0
        x_{14}
        x_{15}
    5.0
    12.0
        +0.076923x_{10} -0.384615x_{12} +0.230769x_3 -0.846154x_4 -0.846154x_5
                                                                 -0.076923x_7
x_{16}
        +0.384615x_{10} -0.923077x_{12} -1.846154x_3 +3.769231x_4 +0.769231x_5
                                                                 +0.615385x_7
    10.0
x_{17}
    7.0
        -0.076923x_{10} -0.615385x_{12} +0.769231x_3 +1.846154x_4 +1.846154x_5
                                                                 -1.923077x_7
```

 $x_3$  enters and  $x_{14}$  leaves

```
+0.595238x_{10} - 0.976190x_{12} + 0.738095x_{14} + 3.666667x_4 - 0.547619x_5 + 3.738095x_6 - 1.857143x_7
                                                 9.0
   x_8
                                               5.0
                                                                                              -0.285714x_{10} + 0.428571x_{12} - 0.714286x_{14} - 1.000000x_4 - 0.857143x_5 + 0.285714x_6 + 2.571429x_7
   x_9
   x_1
                                               3.0
                                                                                              -0.166667x_{10} - 0.166667x_{12} - 0.166667x_{14} - 0.666667x_4 - 0.166667x_5 + 0.833333x_6 - 1.000000x_7
                                             17.0
                                                                                            x_{11}
                                                 1.0
                                                                                            x_2
                                                                                            4.0
 x_{13}
                                               0.0
                                                                                            x_3
 x_{15}
                                               5.0
                                                                                            +0.095238x_{10} + 0.523810x_{12} - 0.761905x_{14} - 0.3333333x_4 - 1.047619x_5 - 2.761905x_6 + 3.142857x_7 + 0.095238x_{10} + 0.09528x_{10} + 0.00528x_{10} + 
x_{16}
                                           12.0
                                                                                            +0.071429x_{10} - 0.357143x_{12} - 0.071429x_{14} - 1.000000x_4 - 0.785714x_5 - 0.071429x_6 - 0.142857x_7 - 0.071429x_6 - 0.07
                                           10.0
                                                                                            +0.428571x_{10} -1.142857x_{12} +0.571429x_{14} +5.000000x_4 +0.285714x_5 +0.571429x_6 +1.142857x_7 +0.571429x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.571427x_7 +0.5714
  x_{17}
                                               7.0
                                                                                              -0.095238x_{10} - 0.523810x_{12} - 0.238095x_{14} + 1.333333x_4 + 2.047619x_5 - 0.238095x_6 - 2.142857x_7 + 2.047619x_5 - 2.047617x_5 - 2.04767x_5 - 2.04767x_5 - 2.04767x_5 - 2.04767x_5 - 2.04767x_5 - 2.04767x_
         z
```

 $x_4$  enters and  $x_3$  leaves

```
9.0
                                                 x_8
                                                 x_9
                         5.0
                         3.0
                                                 x_1
                                                 -0.250000x_{10} - 0.750000x_{12} + 1.750000x_{14} + 3.500000x_3 - 1.250000x_5 + 3.750000x_6 + 3.000000x_7
                        17.0
 x_{11}
                         1.0
                                                 x_2
x_{13}
                         4.0
                                                 +0.321429x_{10}+0.392857x_{12}+1.178571x_{14}-0.500000x_3-1.535714x_5+1.178571x_6+1.857143x_7
                         0.0
                                                 -0.035714x_{10} + 0.178571x_{12} - 0.464286x_{14} - 1.500000x_3 + 0.392857x_5 - 0.464286x_6 - 0.428571x_7 - 0.464286x_7 - 0.46466x_7 - 0.
 x_4
x_{15}
                         5.0
                                                 12.0
                                                 +0.107143x_{10} -0.535714x_{12} +0.392857x_{14} +1.500000x_3 -1.178571x_5 +0.392857x_6 +0.285714x_7 +0.2857
x_{16}
x_{17}
                        10.0
                                                 +0.250000x_{10} - 0.250000x_{12} - 1.750000x_{14} - 7.500000x_3 + 2.250000x_5 - 1.750000x_6 - 1.000000x_7
                                                 -0.142857x_{10} - 0.285714x_{12} - 0.857143x_{14} - 2.000000x_3 + 2.571429x_5 - 0.857143x_6 - 2.714286x_7
                         7.0
```

 $x_5$  enters and  $x_{13}$  leaves

```
11.3255813953
                                                                               x_8
 x_9
                    1.74418604651
                                                                               1.88372093023
                                                                               x_1
x_{11}
                    13.7441860465
                                                                               -0.511628x_{10} - 1.069767x_{12} + 0.790698x_{14} + 3.906977x_3 + 0.813953x_{13} + 2.790698x_6 + 1.488372x_7
                                                                               2.67441860465
 x_2
                   2.60465116279
                                                                               x_5
                    1.02325581395
                                                                               +0.046512x_{10} +0.279070x_{12} -0.162791x_{14} -1.627907x_3 -0.255814x_{13} -0.162791x_6 +0.046512x_{72} +0.046512x_{73} +0.046512x_{74} +0.046512x_{75} +0.0462x_{75} +0.046x_{75} +
 x_4
                    1.93023255814
                                                                               x_{15}
x_{16}
                   8.93023255814
                                                                               15.8604651163
x_{17}
                    13.6976744186
                                                                               +0.395349x_{10} +0.372093x_{12} +1.116279x_{14} -2.837209x_3 -1.674419x_{13} +1.116279x_6 +0.395349x_7 +0.395349x_{10} +0.395340x_{10} +0.39540x_{10} +0.3954
```

 $x_6$  enters and  $x_{15}$  leaves

```
12.821192053
                                                                                                                                                                 x_8
                                           1.62913907285
                                                                                                                                                                 -0.503311x_{10} - 0.079470x_{12} - 1.119205x_{14} + 1.854305x_3 + 0.768212x_{13} + 0.059603x_{15} + 1.377483x_7
   x_9
   x_1
                                           2.33112582781
                                                                                                                                                                 -0.264901x_{10} - 0.357616x_{12} - 0.536424x_{14} + 1.344371x_3 + 0.456954x_{13} - 0.231788x_{15} - 0.801325x_{7} + 0.001325x_{7} + 0.00125x_{7} + 0.001
                                           15.2781456954
                                                                                                                                                                -0.622517x_{10} - 0.940397x_{12} - 0.410596x_{14} + 4.609272x_3 + 1.423841x_{13} - 0.794702x_{15} + 2.966887x_{7} + 2.966887x_{15} + 2.96687x_{15} + 2.96687x_{15} + 2.96687x_{15} + 2.96687x_{15} + 2.96687x_{1
  x_{11}
  x_2
                                           2.82781456954
                                                                                                                                                                3.02649006623
                                                                                                                                                                 x_5
                                      0.933774834437
                                                                                                                                                                 +0.052980x_{10} +0.271523x_{12} -0.092715x_{14} -1.668874x_3 -0.291391x_{13} +0.046358x_{15} -0.039735x_{7} +0.052980x_{10} +0.071523x_{12} +0.092715x_{14} +0.068874x_3 -0.291391x_{13} +0.046358x_{15} +0.039735x_{7} +0.03735x_{7} +0.03735x_{7} +0.03735x_{7} +0.03735x_{7} +0.03735x_{7} +0.03735x_{7} +0.0
  x_4
                                      0.549668874172
   x_6
                                                                                                                                                                 -0.039735x_{10} + 0.046358x_{12} - 0.430464x_{14} + 0.251656x_3 + 0.218543x_{13} - 0.284768x_{15} + 0.529801x_{7} + 0.046358x_{15} + 0.046358x_{15} + 0.046358x_{16} + 0.04638x_{16} + 0.04648x_{16} + 0.046
x_{16}
                                          8.64900662252
                                                                                                                                                                 -0.119205x_{10} - 0.860927x_{12} - 0.291391x_{14} + 1.754967x_3 + 0.655629x_{13} + 0.145695x_{15} - 1.410596x_{7}
                                                                                                                                                                 15.8476821192
  x_{17}
                                                                                                                                                                 14.3112582781
        z
```

 $x_7$  enters and  $x_1$  leaves

```
10.1818181818
                                                                                                                                                                                                                                           +0.842975x_{10}+0.438017x_{12}-0.842975x_{14}-6.628099x_3-0.504132x_{13}-0.512397x_{15}+1.132231x_{15}
 x_8
                                                                                                                                                                                                                                             x_9
                                                              5.63636363636
 x_7
                                                              2.90909090909
                                                                                                                                                                                                                                             -0.330579x_{10} - 0.446281x_{12} - 0.669421x_{14} + 1.677686x_3 + 0.570248x_{13} - 0.289256x_{15} - 1.247934x_{13} + 0.570248x_{13} - 0.289256x_{15} - 0.247934x_{15} + 0.24774x_{15} + 0.24
                                                                                                                                                                                                                                              -1.603306x_{10} - 2.264463x_{12} - 2.396694x_{14} + 9.586777x_3 + 3.115702x_{13} - 1.652893x_{15} - 3.702479x_{13} - 1.66777x_{13} + 3.115702x_{13} + 3
x_{11}
                                                                23.9090909091
                                                             4.27272727273
                                                                                                                                                                                                                                             x_2
                                                              7.72727272727
                                                                                                                                                                                                                                              -0.355372x_{10} - 0.429752x_{12} - 0.644628x_{14} + 2.578512x_3 + 0.438017x_{13} - 0.685950x_{15} - 2.016529x_{15} - 0.016529x_{15} - 0.01620x_{15} - 0.01620x_{15
   x_5
                                                       0.818181818182
                                                                                                                                                                                                                                           +0.066116x_{10}+0.289256x_{12}-0.066116x_{14}-1.735537x_3-0.314050x_{13}+0.057851x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.049587x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.04958x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406x_{15}+0.0406
   x_4
 x_6
                                                              2.09090909091
                                                                                                                                                                                                                                              -0.214876x_{10} - 0.190083x_{12} - 0.785124x_{14} + 1.140496x_3 + 0.520661x_{13} - 0.438017x_{15} - 0.661157x_{15} + 0.061157x_{15} - 0.0611
                                                             4.54545454545
                                                                                                                                                                                                                                           x_{16}
                                                                20.8181818182
                                                                                                                                                                                                                                              +0.157025x_{10} - 0.438017x_{12} - 1.157025x_{14} - 5.371901x_3 - 0.495868x_{13} - 0.487603x_{15} - 2.132231x_1
x_{17}
                                                                                                                                                                                                                                             +0.024793x_{10} -0.016529x_{12} -0.024793x_{14} -0.900826x_3 -0.867769x_{13} -0.603306x_{15} -1.231405x_{15} -0.00866x_{15} -0.0086x_{15} -0.00866x_{15} -0.0086x_{15} -0.0086x_{15} -0.0086x_{15} -0.0086x_{15} -0.0086x_{15} -0.0086x_{15} -0.0086
                                                             17.1818181818
```

 $x_{10}$  enters and  $x_9$  leaves

```
15.1379310345
                                                                                                                         x_8
                                                                                                                        5.87931034483
x_{10}
                             0.965517241379
                                                                                                                        x_7
x_{11}
                               14.4827586207
                                                                                                                        +1.672414x_9 - 1.103448x_{12} + 1.017241x_{14} + 2.620690x_3 + 0.517241x_{13} - 1.086207x_{15} - 0.827586x_1
                               5.29310344828
                                                                                                                        x_2
                               5.63793103448
                                                                                                                        x_5
                                                                                                                        -0.068966x_9 + 0.241379x_{12} - 0.206897x_{14} - 1.448276x_3 - 0.206897x_{13} + 0.034483x_{15} - 0.068966x_1 + 0.0068966x_2 + 0.0068966x_3 + 0.0068966x_2 + 0.0068966x_3 + 0.0068966x_3 + 0.0068966x_4 + 0.0068966x_3 + 0.0068966x_4 + 0.006896x_4 + 0.00686x_4 + 0.00666x_4 + 0.
                               1.20689655172
  x_4
                                                                                                                        x_6
                             0.827586206897
                                                                                                                         -0.362069x_9 -0.482759x_{12} -0.086207x_{14} +0.896552x_3 +0.413793x_{13} +0.431034x_{15} +1.137931x_{11} +0.431034x_{15} +0.43104x_{15} +0.4
                               6.58620689655
x_{16}
                               21.7413793103
                                                                                                                         -0.163793x_9 - 0.551724x_{12} - 1.491379x_{14} - 4.689655x_3 - 0.241379x_{13} - 0.543103x_{15} - 2.413793x_{11} - 0.543103x_{12} - 0.543103x_{13} - 0.543103x_{15} - 0.543103x
x_{17}
                                                                                                                        17.3275862069
```

 $x_{-1}$  enters and Final Dictionary Solution: 17.3275862069 Num Pivots: 8