```
4.0
        -3.000000x_1 + 3.000000x_2 - 3.000000x_3 + 1.000000x_4
x_8
        3.0
x_9
    1.0
        x_{10}
x_{11}
    5.0
        1.0
        +3.000000x_1 + 2.000000x_2 - 2.000000x_3
                                             -1.000000x_5 -3.000000x_6 +1.000000x_7
x_{12}
    4.0
                 -3.0000000x_2 + 3.000000x_3 + 3.0000000x_4 + 1.0000000x_5 - 3.0000000x_6 + 3.0000000x_7
x_{13}
    3.0
        -2.000000x_1 - 3.000000x_2 - 2.000000x_3 + 3.000000x_4 + 2.000000x_5 + 3.000000x_6
x_{14}
x_{15}
    4.0
        +3.000000x_1 + 2.000000x_2 - 3.000000x_3 - 1.000000x_4 - 2.000000x_5 + 3.000000x_6
                          +2.000000x_3 -2.000000x_4 -1.000000x_5 -3.000000x_6 +3.000000x_7
    7.0
        -3.000000x_1
x_{16}
x_{1\underline{7}}
    14.0
        0.0
        -1.000000x_1 + 2.000000x_2 - 2.000000x_3 - 1.000000x_4
                                                      -1.000000x_6 -1.000000x_7
z
```

No initialization required –; Proceed to Optimize.

```
x_8
    4.0
        -3.000000x_1 + 3.000000x_2 - 3.000000x_3 + 1.000000x_4
    3.0
        x_9
    1.0
        x_{10}
    5.0
        x_{11}
x_{12}
    1.0
        +3.000000x_1 +2.000000x_2 -2.000000x_3
                                           -1.000000x_5 -3.000000x_6 +1.000000x_7
                 -3.000000x_2 + 3.000000x_3 + 3.000000x_4 + 1.000000x_5 - 3.000000x_6 + 3.000000x_7
    4.0
x_{13}
x_{14}
    3.0
        -2.000000x_1 -3.000000x_2 -2.000000x_3 +3.000000x_4 +2.000000x_5 +3.000000x_6
    4.0
        +3.000000x_1 + 2.000000x_2 - 3.000000x_3 - 1.000000x_4 - 2.000000x_5 + 3.000000x_6
x_{15}
    7.0
x_{16}
        -3.000000x_1
                         +2.000000x_3 -2.000000x_4 -1.0000000x_5 -3.000000x_6 +3.000000x_7
   14.0
       x_{17}
        -1.000000x_1 + 2.000000x_2 - 2.000000x_3 - 1.000000x_4
    0.0
                                                    -1.000000x_6 -1.000000x_7
z
```

 $x_2$  enters and  $x_{14}$  leaves

```
7.0
         -5.000000x_1 - 1.000000x_{14} - 5.0000000x_3 + 4.000000x_4 + 2.000000x_5 + 3.000000x_6
x_8
    2.0
         x_9
    3.0
         x_{10}
    7.0
         -0.333333x_1 - 0.666667x_{14} - 0.3333333x_3
                                                   +0.3333333x_5 +1.000000x_6 -3.000000x_7
x_{11}
         +1.666667x_1 - 0.666667x_{14} - 3.333333x_3 + 2.000000x_4 + 0.333333x_5 - 1.000000x_6 + 1.000000x_7
    3.0
x_{12}
    1.0
         +2.000000x_1 +1.000000x_{14} +5.000000x_3
                                                   -1.000000x_5 -6.000000x_6 +3.000000x_7
x_{13}
    1.0
         -0.666667x_1 - 0.3333333x_{14} - 0.666667x_3 + 1.000000x_4 + 0.666667x_5 + 1.000000x_6
x_2
    6.0
         +1.666667x_1 - 0.666667x_{14} - 4.333333x_3 + 1.000000x_4 - 0.666667x_5 + 5.000000x_6
x_{15}
    7.0
         -3.000000x_1
                              +2.000000x_3 - 2.000000x_4 - 1.0000000x_5 - 3.000000x_6 + 3.000000x_7
x_{16}
                                                   -3.000000x_5
         +5.000000x_1 +1.000000x_{14} +5.000000x_3
x_{17}
    11.0
         2.0
```

 $x_4$  enters and  $x_{16}$  leaves

```
-11.000000x_1 - 1.000000x_{14} - 1.000000x_3 - 2.000000x_{16}
                                       -3.000000x_6 +6.000000x_7
  21.0
x_8
   5.5
      x_9
  17.0
     x_{10}
   7.0
      -0.333333x_1 -0.666667x_{14} -0.3333333x_3
                                 +0.3333333x_5 +1.000000x_6 -3.000000x_7
x_{11}
      10.0
x_{12}
      +2.000000x_1 +1.000000x_{14} +5.000000x_3
                                 -1.000000x_5 -6.000000x_6 +3.000000x_7
x_{13}
   1.0
      4.5
x_2
x_{15}
   9.5
      +1.000000x_3 -0.500000x_{16} -0.500000x_5 -1.500000x_6 +1.500000x_7
   3.5
      -1.500000x_1
x_4
x_{17}
      +5.000000x_1 +1.000000x_{14} +5.000000x_3
                                 -3.000000x_5
  11.0
z
   5.5
```

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

```
-11.000000x_1 - 1.000000x_{14} - 1.0000000x_3 - 2.000000x_{16}
                                                                                                                                                                                                                                                            -3.000000x_6 +6.000000x_7
                             21.0
 x_8
               2.33333333333
                                                            -10.166667x_1 - 2.833333x_{14} - 13.166667x_3 - 0.500000x_{16} + 3.166667x_{13} + 18.500000x_6 - 6.000000x_7
 x_9
                                                            -15.666667x_1 - 3.3333333x_{14} - 11.666667x_3 - 2.000000x_{16} + 2.666667x_{13} + 13.000000x_{16} + 2.666667x_{16} + 2.66667x_{16} + 2.666667x_{16} + 2.6666
x_{10}
               14.3333333333
                                                                                                                                                                                                                                                                                                  -2.000000x_7
              7.33333333333
                                                             +0.333333x_1 -0.333333x_{14} +1.333333x_3
                                                                                                                                                                                                                     -0.333333x_{13} -1.000000x_6
x_{11}
                                                             -2.666667x_1 -1.3333333x_{14} -4.666667x_3 -1.000000x_{16} + 0.666667x_{13}
              9.33333333333
                                                                                                                                                                                                                                                                                                   +2.000000x_7
x_{12}
                                                             +2.000000x_1 +1.0000000x_{14} +5.0000000x_3
                                                                                                                                                                                                                     -1.000000x_{13} -6.000000x_6 +3.000000x_7
                              1.0
x_5
x_2
               4.66666666667
                                                             -1.833333x_1 -0.166667x_{14} +1.166667x_3 -0.500000x_{16} -0.166667x_{13} -1.500000x_6 +2.000000x_7
                                                             -2.166667x_1 -1.833333x_{14} -9.166667x_3 -0.500000x_{16} +1.166667x_{13} +10.500000x_6 -2.000000x_7
x_{15}
              8.33333333333
x_4
                              3.0
                                                             -2.500000x_1 -0.500000x_{14} -1.500000x_3 -0.500000x_{16} +0.500000x_{13} +1.500000x_6
                              8.0
                                                              -1.000000x_1 -2.000000x_{14} -10.000000x_3
                                                                                                                                                                                                                    +3.000000x_{13} + 18.000000x_6 - 12.000000x_7
x_{17}
              6.333333333333
                                                             z
```

 $x_3$  enters and  $x_9$  leaves

```
20.8227848101
                                                                                         -10.227848x_1 - 0.784810x_{14} + 0.075949x_9 - 1.962025x_{16} - 0.240506x_{13} - 4.405063x_6 + 6.455696x_7
 x_8
                                                                                          x_3
                     0.177215189873
x_{10}
                       12.2658227848
                                                                                           -0.696203x_1 -0.620253x_{14} -0.101266x_9 -0.050633x_{16} -0.012658x_{13} +0.873418x_6 -2.607595x_7
                        7.56962025316
x_{11}
                       8.50632911392
                                                                                           x_{12}
 x_5
                        1.88607594937
                                                                                           -1.860759x_1 -0.075949x_{14} -0.379747x_9 -0.189873x_{16} +0.202532x_{13} +1.025316x_6 +0.721519x_7
                       4.87341772152
                                                                                           -2.734177x_{1} -0.417722x_{14} -0.088608x_{9} -0.544304x_{16} +0.113924x_{13} +0.139241x_{6} +1.468354x_{7} +0.113924x_{13} +0.13924x_{14} +0.113924x_{15} +0.11384x_{15} 
 x_2
x_{15}
                       6.70886075949
                                                                                           +4.911392x_1 +0.139241x_{14} +0.696203x_9 -0.151899x_{16} -1.037975x_{13} -2.379747x_6 +2.177215x_{72} +2.177215x_{73} +2.177215x_{74} +2.177215x_{74} +2.177215x_{75} +2.17
                        2.73417721519
                                                                                           x_4
x_{17}
                       6.22784810127
                                                                                           +6.721519x_1 +0.151899x_{14} +0.759494x_9 +0.379747x_{16} +0.594937x_{13} +3.949367x_6 -7.443038x_7
                                                                                           6.6582278481
```

 $x_7$  enters and  $x_3$  leaves

```
23.3333333333
                    x_8
     0.388888888889
                     -1.694444x_1 -0.472222x_{14} -0.166667x_9 -0.083333x_{16} +0.527778x_{13} +3.083333x_6 -2.194444x_3
x_7
     14.3333333333
                    x_{10}
x_{11}
     6.555555556
                     +3.722222x_1 +0.611111x_{14} +0.333333x_9 +0.166667x_{16} -1.388889x_{13} -7.166667x_6 +5.722222x_3
                     -6.055556x_1 -2.277778x_{14} -0.333333x_9 -1.166667x_{16} +1.722222x_{13} +6.166667x_6 -9.055556x_3
     10.1111111111
x_{12}
     2.16666666667
                     -3.083333x_1 -0.416667x_{14} -0.500000x_9 -0.250000x_{16} +0.583333x_{13} +3.250000x_6 -1.583333x_3
x_5
     5.44444444444
                     -5.222222x_1 -1.111111x_{14} -0.333333x_9 -0.666667x_{16} +0.888889x_{13} +4.666667x_6 -3.222222x_3
x_2
x_{15}
     7.5555555556
                     +1.222222x_1 -0.888889x_{14} +0.333333x_9 -0.333333x_{16} +0.111111x_{13} +4.333333x_6 -4.777778x_3
                     -2.500000x_1 -0.500000x_{14} -0.000000x_9 -0.500000x_{16} +0.500000x_{13} +1.500000x_6 -1.500000x_3
          3.0
x_4
     3.33333333333
                    +19.333333x_1 + 3.666667x_{14} + 2.000000x_9 + 1.000000x_{16} - 3.333333x_{13} - 19.000000x_6 + 16.333333x_3
x_{17}
          7.5
 z
                     -7.250000x_1 -1.250000x_{14} -0.500000x_9 -0.750000x_{16} +0.750000x_{13} +3.750000x_6 -4.750000x_3
```

 $x_6$  enters and  $x_{17}$  leaves

```
-5.394737x_1 - 0.842105x_{14} + 0.631579x_9 - 1.684211x_{16} + 0.447368x_{13} - 0.815789x_{17} - 0.842105x_3
                26.0526315789
 x_8
              0.929824561404
                                                            +1.442982x_1 + 0.122807x_{14} + 0.157895x_9 + 0.078947x_{16} - 0.013158x_{13} - 0.162281x_{17} + 0.456140x_3
 x_7
x_{10}
                16.6140350877
                                                             -2.438596x_1 - 0.824561x_{14} + 1.368421x_9 - 1.315789x_{16} + 0.385965x_{13} - 0.684211x_{17} - 0.491228x_3
                5.29824561404
                                                            x_{11}
                11.1929824561
                                                            +0.219298x_1 - 1.087719x_{14} + 0.315789x_9 - 0.842105x_{16} + 0.640351x_{13} - 0.324561x_{17} - 3.754386x_3
x_{12}
                                                             +0.223684x_1 + 0.210526x_{14} - 0.157895x_9 - 0.078947x_{16} + 0.013158x_{13} - 0.171053x_{17} + 1.210526x_3
                2.73684210526
x_5
                6.26315789474
                                                             -0.473684x_1 - 0.210526x_{14} + 0.157895x_9 - 0.421053x_{16} + 0.070175x_{13} - 0.245614x_{17} + 0.789474x_3
x_2
x_{15}
                8.31578947368
                                                            +5.631579x_1 - 0.052632x_{14} + 0.789474x_9 - 0.105263x_{16} - 0.649123x_{13} - 0.228070x_{17} - 1.052632x_3
                3.26315789474
                                                             -0.973684x_1 - 0.210526x_{14} + 0.157895x_9 - 0.421053x_{16} + 0.236842x_{13} - 0.078947x_{17} - 0.210526x_3
 x_4
              0.175438596491
                                                             +1.017544x_1 + 0.192982x_{14} + 0.105263x_9 + 0.052632x_{16} - 0.175439x_{13} - 0.052632x_{17} + 0.859649x_3 + 0.052632x_{17} + 0.05262x_{17} + 0.05262
 x_6
                8.15789473684
                                                             -3.434211x_1 - 0.526316x_{14} - 0.105263x_9 - 0.552632x_{16} + 0.092105x_{13} - 0.197368x_{17} - 1.526316x_3
   z
```

 $x_{13}$  enters and  $x_6$  leaves

```
26.5
                    -2.800000x_1 - 0.350000x_{14} + 0.900000x_9 - 1.550000x_{16} - 2.550000x_6 - 0.950000x_{17} + 1.350000x_3
x_8
    0.916666666667
                   +1.366667x_1 + 0.108333x_{14} + 0.150000x_9 + 0.075000x_{16} + 0.075000x_6 - 0.158333x_{17} + 0.391667x_3
x_7
         17.0
                    x_{10}
                    -4.333333x_1 - 0.916667x_{14} - 0.500000x_9 - 0.250000x_{16} + 0.750000x_6 + 0.416667x_{17} - 1.083333x_3
x_{11}
     5.16666666667
     11.8333333333
                   +3.933333x_1 - 0.383333x_{14} + 0.700000x_9 - 0.650000x_{16} - 3.650000x_6 - 0.516667x_{17} - 0.616667x_3
x_{12}
x_5
         2.75
                    +0.300000x_1 + 0.225000x_{14} - 0.150000x_9 - 0.075000x_{16} - 0.075000x_6 - 0.175000x_{17} + 1.275000x_3
     6.33333333333
                    x_2
x_{15}
     7.666666666667
                   +1.866667x_1 - 0.766667x_{14} + 0.400000x_9 - 0.300000x_{16} + 3.700000x_6 - 0.033333x_{17} - 4.233333x_3
          3.5
                    x_4
          1.0
                    +5.800000x_1 + 1.100000x_{14} + 0.600000x_9 + 0.300000x_{16} - 5.700000x_6 - 0.300000x_{17} + 4.900000x_3
x_{13}
         8.25
                    -2.900000x_1 - 0.425000x_{14} - 0.050000x_9 - 0.525000x_{16} - 0.525000x_6 - 0.225000x_{17} - 1.075000x_3
 z
```

 $x_{-1}$  enters and Final Dictionary Solution: 8.25 Num Pivots: 7