```
10.0
       x_8
   2.0
               -3.000000x_2 - 2.000000x_3 - 3.000000x_4 - 3.000000x_5 + 3.000000x_6 + 2.000000x_7
x_9
   5.0
       x_{10}
x_{11}
   10.0
       -1.000000x_1 + 2.000000x_2 + 1.000000x_3 + 1.000000x_4 - 3.000000x_5 + 2.000000x_6 + 1.000000x_7
       3.0
x_{12}
   13.0
       -3.000000x_1 - 2.000000x_2
                              -3.000000x_4 - 3.000000x_5
x_{13}
       15.0
x_{14}
x_{15}
   9.0
       +2.000000x_1
                      +2.000000x_3 -3.000000x_4 +3.0000000x_5 -2.000000x_6 -3.000000x_7
                      +3.000000x_3 +2.000000x_4 -1.000000x_5 +2.000000x_6 +2.000000x_7
   11.0
x_{16}
x_{1\underline{7}}
   4.0
       0.0
       -2.000000x_1 + 2.000000x_2 + 2.000000x_3
                                      +1.000000x_5 +1.000000x_6 +1.000000x_7
z
```

No initialization required –; Proceed to Optimize.

```
x_8
       -2.000000x_1 - 3.000000x_2 + 2.000000x_3 - 2.000000x_4 + 2.000000x_5 + 3.000000x_6 + 2.000000x_7
   2.0
              -3.000000x_2 - 2.000000x_3 - 3.000000x_4 - 3.000000x_5 + 3.000000x_6 + 2.000000x_7
x_9
   5.0
       x_{10}
   10.0
       x_{11}
x_{12}
   3.0
       -3.000000x_4 -3.000000x_5
   13.0
       -3.000000x_1 - 2.000000x_2
                                                     +1.000000x_7
x_{13}
x_{14}
   15.0
       9.0
       +2.000000x_1
                      +2.000000x_3 -3.000000x_4 +3.000000x_5 -2.000000x_6 -3.000000x_7
x_{15}
   11.0
x_{16}
                      +3.000000x_3 + 2.000000x_4 - 1.000000x_5 + 2.000000x_6 + 2.000000x_7
   4.0
       x_{17}
   0.0
       -2.000000x_1 + 2.000000x_2 + 2.000000x_3
                                      +1.000000x_5 +1.000000x_6 +1.000000x_7
z
```

 $x_2$  enters and  $x_9$  leaves

```
8.0
                -2.000000x_1 + 1.000000x_9 + 4.000000x_3 + 1.000000x_4 + 5.000000x_5
x_8
   0.666666666667
                         -0.333333x_9 - 0.666667x_3 - 1.000000x_4 - 1.000000x_5 + 1.000000x_6 + 0.666667x_7
x_2
                -1.000000x_1 + 0.666667x_9 + 4.333333x_3 + 1.000000x_4 + 5.000000x_5
    3.66666666667
x_{10}
x_{11}
    11.3333333333
                3.6666666667
                x_{12}
    11.666666667
                x_{13}
                +2.000000x_1 +0.666667x_9 +2.333333x_3 +5.000000x_4 +1.000000x_5
    13.666666667
                                                                       -2.333333x_7
x_{14}
                                  +2.000000x_3 -3.000000x_4 +3.000000x_5 -2.000000x_6 -3.000000x_7
        9.0
                +2.000000x_1
x_{15}
       11.0
                                  +3.000000x_3 + 2.000000x_4 - 1.000000x_5 + 2.000000x_6 + 2.000000x_7
x_{16}
        6.0
                +2.000000x_1 - 1.000000x_9 - 3.000000x_3 - 4.000000x_4 - 5.000000x_5 + 1.000000x_6 + 3.000000x_7
x_{17}
                1.33333333333
```

 $x_3$  enters and  $x_2$  leaves

```
12.0
x_8
               1.0
x_3
   8.0
       x_{10}
x_{11}
   11.0
       -1.000000x_1 - 0.500000x_9 + 0.500000x_2 - 0.500000x_4 - 4.500000x_5 + 3.500000x_6 + 2.000000x_7
       -1.000000x_1 + 1.000000x_9 + 4.000000x_2 + 1.000000x_4
   1.0
                                               -1.000000x_6 - 1.000000x_7
x_{12}
   13.0
       -3.000000x_1
                       -2.000000x_2 -3.000000x_4 -3.000000x_5
                                                       +1.000000x_7
x_{13}
       16.0
x_{14}
x_{15}
   11.0
       +2.000000x_1 -1.000000x_9 -3.000000x_2 -6.000000x_4
                                               +1.000000x_6 -1.000000x_7
               -1.500000x_9 - 4.500000x_2 - 2.500000x_4 - 5.500000x_5 + 6.500000x_6 + 5.000000x_7
   14.0
x_{16}
   3.0
       +2.000000x_1 + 0.500000x_9 + 4.500000x_2 + 0.500000x_4 - 0.500000x_5 - 3.500000x_6
x_{17}
   2.0
```

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

```
+1.428571x_1 - 0.142857x_9 + 1.714286x_2 - 4.142857x_4 - 1.857143x_5 - 1.714286x_{17} + 4.000000x_7
                            17.1428571429
  x_8
                            2.28571428571
                                                                                                        +0.857143x_1 - 0.285714x_9 + 0.428571x_2 - 1.285714x_4 - 1.714286x_5 - 0.428571x_{17} + 1.000000x_7
 x_3
                                                                                                        +2.714286x_1 - 0.571429x_9 + 1.857143x_2 - 4.571429x_4 - 2.428571x_5 - 1.857143x_{17} + 4.000000x_7 + 2.714286x_1 - 2.428571x_5 - 2.428571x_
x_{10}
                           13.5714285714
                                                   14.0
                                                                                                        +1.000000x_1
                                                                                                                                                                                                                              +5.000000x_2 -0.000000x_4 -5.0000000x_5 -1.0000000x_{17} +2.0000000x_7
x_{11}
                                                                                                        -1.571429x_1 + 0.857143x_9 + 2.714286x_2 + 0.857143x_4 + 0.142857x_5 + 0.285714x_{17} - 1.000000x_7
                         0.142857142857
x_{12}
                                                  13.0
                                                                                                                                                                                                                              -2.000000x_2 -3.000000x_4 -3.000000x_5
                                                                                                         -3.000000x_1
x_{13}
                                                                                                                                                                                                                              +1.000000x_2 +2.000000x_4 -3.000000x_5 -1.000000x_{17}
                                                   19.0
                                                                                                         +4.000000x_1
x_{14}
x_{15}
                           11.8571428571
                                                                                                        +2.571429x_1 - 0.857143x_9 - 1.714286x_2 - 5.857143x_4 - 0.142857x_5 - 0.285714x_{17} - 1.000000x_7
x_{16}
                           19.5714285714
                                                                                                        0.857142857143
                                                                                                        +0.571429x_1+0.142857x_9+1.285714x_2+0.142857x_4-0.142857x_5-0.285714x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.142857x_{17}+0.1
   x_6
                           5.42857142857
                                                                                                        z
```

 $x_1$  enters and  $x_{12}$  leaves

```
17.2727272727
                                                                                                  x_8
                                                                                                  x_3
                           2.36363636364
                           13.81818182
                                                                                                  -1.727273x_{12} + 0.909091x_9 + 6.545455x_2 - 3.090909x_4 - 2.181818x_5 - 1.363636x_{17} + 2.272727x_7 + 2.27277x_7 + 2.2727x_7 + 2.2727
x_{10}
                                                                                                  -0.636364x_{12} + 0.545455x_9 + 6.727273x_2 + 0.545455x_4 - 4.909091x_5 - 0.818182x_{17} + 1.363636x_7
                           14.0909090909
x_{11}
                      0.0909090909091
                                                                                                  -0.636364x_{12} + 0.545455x_9 + 1.727273x_2 + 0.545455x_4 + 0.090909x_5 + 0.181818x_{17} - 0.636364x_7
 x_1
x_{13}
                           12.7272727273
                                                                                                  +1.909091x_{12} - 1.636364x_9 - 7.181818x_2 - 4.636364x_4 - 3.272727x_5 - 0.545455x_{17} + 2.909091x_7
                           19.3636363636
                                                                                                  -2.545455x_{12} + 2.181818x_9 + 7.909091x_2 + 4.181818x_4 - 2.636364x_5 - 0.272727x_{17} - 2.545455x_{7}
x_{14}
                                                                                                  x_{15}
                           12.0909090909
                           19.9090909091
                                                                                                  -2.363636x_{12} + 1.454545x_9 + 10.272727x_2 + 0.454545x_4 - 6.090909x_5 - 1.181818x_{17} + 2.636364x_7 + 2.63664x_7 + 2.6364x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.6364x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.6364x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.63664x_7 + 2.6364x_7 + 2.63664x_7 + 2.6366
x_{16}
                         0.909090909091
                                                                                                  -0.363636x_{12} + 0.454545x_9 + 2.272727x_2 + 0.454545x_4 - 0.090909x_5 - 0.181818x_{17} - 0.363636x_7
  x_6
                                                                                                  -0.181818x_{12} - 0.272727x_9 + 4.636364x_2 - 2.272727x_4 - 2.545455x_5 - 1.090909x_{17} + 2.818182x_7
                          5.45454545455
```

 $x_2$  enters and  $x_{13}$  leaves

```
24.6835443038
  x_8
  x_3
                                               5.74683544304
                                                                                                                                                                                            25.417721519
                                                                                                                                                                                            +0.012658x_{12} - 0.582278x_9 - 0.911392x_{13} - 7.316456x_4 - 5.164557x_5 - 1.860759x_{17} + 4.924051x_7 - 1.860759x_{17} + 4.924051x_7 - 1.860759x_{17} + 4.924051x_7 - 1.860759x_{17} + 4.924051x_7 - 1.860759x_{17} - 1.860750x_{17} - 1.86070x_{17} - 1.86070x_{17} - 1.86070x_{17} - 1.86070x_{17} - 1.86070x_{17} - 1.86070x_{17
 x_{10}
x_{11}
                                              26.0126582278
                                                                                                                                                                                            +1.151899x_{12} - 0.987342x_9 - 0.936709x_{13} - 3.797468x_4 - 7.974684x_5 - 1.329114x_{17} + 4.088608x_7
                                                                                                                                                                                            -0.177215x_{12} + 0.151899x_9 - 0.240506x_{13} - 0.569620x_4 - 0.696203x_5 + 0.050633x_{17} + 0.063291x_7 + 0.063201x_7 + 0.063291x_7 + 0.06
                                              3.15189873418
    x_1
                                               1.77215189873
                                                                                                                                                                                            x_2
                                                                                                                                                                                            33.3797468354
  x_{14}
                                               16.9240506329
                                                                                                                                                                                            -0.911392x_{12} - 0.075949x_9 - 0.379747x_{13} - 6.215190x_4 - 1.151899x_5 - 0.025316x_{17} - 1.531646x_7 - 0.025316x_{17} 
x_{15}
                                                                                                                                                                                            +0.367089x_{12} -0.886076x_9 -1.430380x_{13} -6.177215x_4 -10.772152x_5 -1.962025x_{17} +6.797468x_7 -1.062025x_{17} +0.797468x_7 -1.062025x_{17} +0.062025x_{17} +0
 x_{16}
                                              38.1139240506
                                                                                                                                                                                              4.93670886076
    x_6
                                                                                                                                                                                            +1.050633x_{12} - 1.329114x_9 - 0.645570x_{13} - 5.265823x_4 - 4.658228x_5 - 1.443038x_{17} + 4.696203x_7 - 1.443038x_{17} + 4.696203x_7 - 1.443038x_{17} - 1.44308x_{17} - 1.44308x_{17} - 1.44308x_{17} - 1.44308x_{17} - 1.44308x_{17} - 1.44308x_{17} - 1.44308
                                               13.6708860759
```

 $x_7$  enters and  $x_{15}$  leaves

```
-2.644628x_{12} - 0.553719x_9 - 1.768595x_{13} - 25.479339x_4 - 7.231405x_5 - 1.851240x_{17} - 3.123967x_{15} - 3.12397x_{15} - 3.12397x_{15
                                                                            77.5537190083
      x_8
                                                                            19.3140495868
                                                                                                                                                                                                                                                                                                      x_3
  x_{10}
                                                                                 79.826446281
                                                                                                                                                                                                                                                                                                        -2.917355x_{12} - 0.826446x_9 - 2.132231x_{13} - 27.297521x_4 - 8.867769x_5 - 1.942149x_{17} - 3.214876x_{15} - 2.014876x_{15} - 1.0142149x_{17} - 3.014876x_{15} - 1.014876x_{15} - 1.014876x
                                                                          71.1900826446
                                                                                                                                                                                                                                                                                                      -1.280992x_{12} - 1.190083x_9 - 1.950413x_{13} - 20.388430x_4 - 11.049587x_5 - 1.396694x_{17} - 2.669421x_{15} - 2.669421x_
  x_{11}
                                                                                                                                                                                                                                                                                                      -0.214876x_{12} + 0.148760x_9 - 0.256198x_{13} - 0.826446x_4 - 0.743802x_5 + 0.049587x_{17} - 0.041322x_{15} + 0.04958x_{17} - 0.04132x_{17} + 0.0412x_{17} + 0.0412
                                                                          3.85123966942
    x_1
                                                                                                                                                                                                                                                                                                      +0.024793x_{12} - 0.247934x_9 - 0.239669x_{13} - 2.289256x_4 - 0.760331x_5 - 0.082645x_{17} - 0.264463x_{15}
                                                                                 6.2479338843
    x_2
                                                                                   40.652892562
                                                                                                                                                                                                                                                                                                        -0.834711x_{12} + 0.347107x_9 - 1.264463x_{13} - 3.595041x_4 - 6.735537x_5 - 0.884298x_{17} - 0.429752x_{15} - 0.884298x_{17} - 0.42976x_{15} - 0.884298x_{17} - 0.42976x_{15} - 0.884298x_{17} - 0.884298x_{17} - 0.42976x_{15} - 0.884298x_{17} - 0.88428x_{17} - 0.88428x_{17} - 0.88428x_{17} - 0.88428x_{17} - 0.88428x_{17} - 0.88428x_{
x_{14}
                                                                                                                                                                                                                                                                                                      -0.595041x_{12} - 0.049587x_9 - 0.247934x_{13} - 4.057851x_4 - 0.752066x_5 - 0.016529x_{17} - 0.652893x_{15} - 0.016529x_{17} - 0.016629x_{17} - 0.016620x_{17} - 0.01660x_{17} - 0.016
      x_7
                                                                               11.0495867769
                                                                          113.223140496
                                                                                                                                                                                                                                                                                                      -3.677686x_{12} - 1.223140x_9 - 3.115702x_{13} - 33.760331x_4 - 15.884298x_5 - 2.074380x_{17} - 4.438017x_{15} - 2.074380x_{17} - 4.438017x_{15} - 2.074380x_{17} - 4.438017x_{15} - 2.074380x_{17} - 2.074380x_
  x_{16}
                                                                          11.0909090909
                                                                                                                                                                                                                                                                                                        x_6
                                                                                                                                                                                                                                                                                                      -1.743802x_{12} - 1.561983x_9 - 1.809917x_{13} - 24.322314x_4 - 8.190083x_5 - 1.520661x_{17} - 3.066116x_{15} - 1.500661x_{17} - 3.066116x_{17} - 1.500661x_{17} - 1.500661x_{
                                                                        65.5619834711
```

 $x_{-1}$  enters and Final Dictionary Solution: 65.5619834711 Num Pivots: 6