```
G_u = 27.6 * (0.01^2/0.1);
G_al = 205 * (0.01^2/0.1);
G_fe = 16 * (0.01^2/0.1);
G_inf = 150 * 0.01^2;

G = [2*G_u -G_u 0 0 0 0 0 0 0 0;
     -G_u 2*G_u -G_u 0 0 0 0 0 0 0;
     0 -G_u 2*G_u -G_u 0 0 0 0 0 0;
     0 0 -G_u (G_u+G_al) -G_al 0 0 0 0 0;
     0 0 0 -G_al 2*G_al -G_al 0 0 0 0;
     0 0 0 0 -G_al 2*G_al -G_al 0 0 0;
     0 0 0 0 0 -G_al (G_al+G_fe) -G_fe 0 0;
     0 0 0 0 0 0 -G_fe 2*G_fe -G_fe 0;
     0 0 0 0 0 0 0 -G_fe 2*G_fe -G_fe;
     0 0 0 0 0 0 0 0 -G_fe (G_fe+G_inf)];

b = [G_u*373.15 0 0 0 0 0 0 0 0 G_inf*298]';

sparse(G);

T_total  = G \ b;

T_final = [373.15 T_total' 298]';

x = 0:0.1:1.1;
f1 = figure('Name', 'Figure 1: Plot of T_final');
plot(x,T_final');
xlabel('Position (m)');
ylabel('Temp (K)');
title('Plot of T(x) = T_{final}')

diary vj_problem1.txt
echo
G_u
G_fe
G_al
G_inf
sparse(G)
sparse(b)
T_total
T_final
echo off
diary off
```

```
G_u

G_u =

    0.0276

G_fe

G_fe =

    0.0160

G_al
```

```
G_al =

    0.2050

G_inf

G_inf =

    0.0150

sparse(G)

ans =

   (1,1)        0.0552
   (2,1)       -0.0276
   (1,2)       -0.0276
   (2,2)        0.0552
   (3,2)       -0.0276
   (2,3)       -0.0276
   (3,3)        0.0552
   (4,3)       -0.0276
   (3,4)       -0.0276
   (4,4)        0.2326
   (5,4)       -0.2050
   (4,5)       -0.2050
   (5,5)        0.4100
   (6,5)       -0.2050
   (5,6)       -0.2050
   (6,6)        0.4100
   (7,6)       -0.2050
   (6,7)       -0.2050
   (7,7)        0.2210
   (8,7)       -0.0160
   (7,8)       -0.0160
   (8,8)        0.0320
   (9,8)       -0.0160
   (8,9)       -0.0160
   (9,9)        0.0320
  (10,9)       -0.0160
   (9,10)      -0.0160
  (10,10)       0.0310

sparse(b)

ans =

   (1,1)       10.2989
  (10,1)        4.4700

T_total

T_total =

  366.5688
  359.9876
  353.4064
  346.8252
  345.9392
  345.0531
```

```
           344.1671
           332.8145
           321.4620
           310.1094


    T_final

    T_final =

           373.1500
           366.5688
           359.9876
           353.4064
           346.8252
           345.9392
           345.0531
           344.1671
           332.8145
           321.4620
           310.1094
           298.0000


    echo off
```
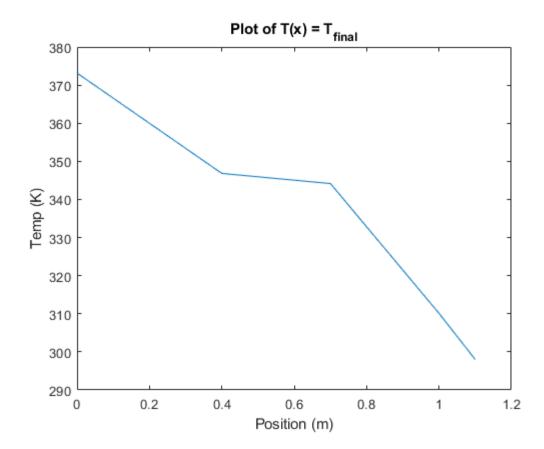

Plot of T(x) = T_final

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