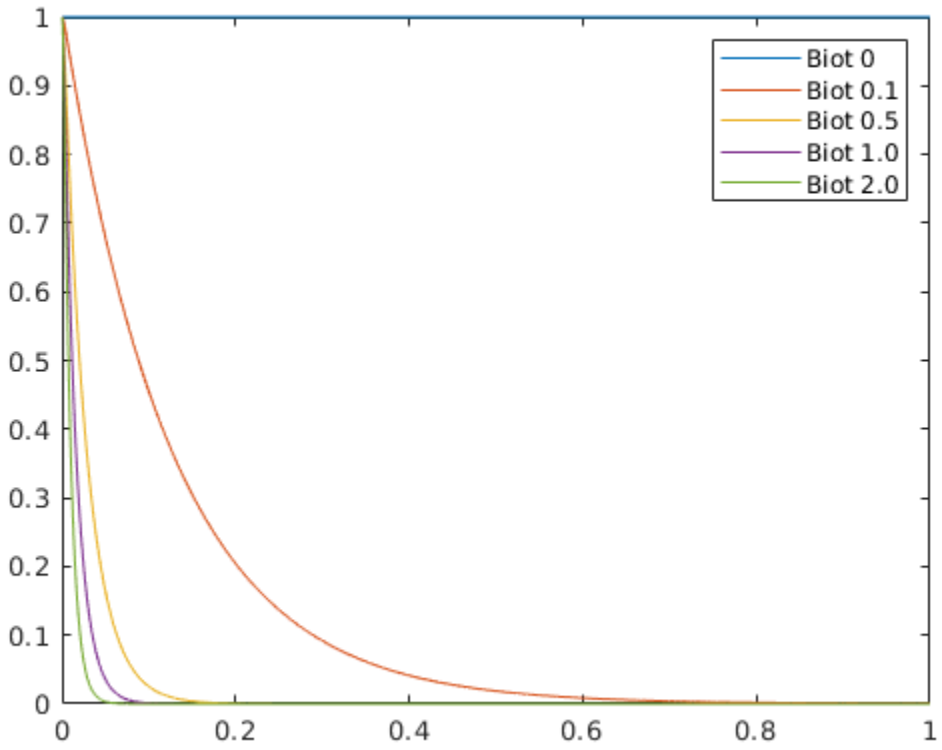
```
delta = 0.01;  % delta = delta_x = delta_y
delta_t = 0.005;
t = delta_t;
t_max = 20;
n_plot = t_max/delta_t;
epsilon = 1e-6;
Gamma = delta_t/delta^2;
N = 1 + 1/delta;
N_red = N-floor(N/2);
Biot_vals = [0,0.1,0.5,1.0,2.0];
Biot = 0;
figure;

for iter = 1:5
 Biot = Biot_vals(iter);
 Soln = [];
 t = delta_t;
 theta_init = ones(N_red);
 theta = theta_init;
 while(t<t_max)
  flag=1;
  while(flag)
   rms = 0;
   for i = 2:N_red-1
    for j = 2:N_red-1
     residual = theta_init(i,j) - (Gamma*(4*theta(i,j) - theta(i,j-1)
 - theta(i,j+1) - theta(i-1,j) - theta(i+1,j)) + theta(i,j));
     rms = rms+residual^2;
     theta(i,j) = theta(i,j) + residual/(1+4*Gamma);
    end
   end

   for j = 1:N_red
    res1 = -1*((theta(N_red,j)-theta(N_red-1,j))/delta +
 Biot*theta(N_red,j));
    theta(N_red,j) = theta(N_red,j) + res1/(Biot+1/delta);
    res2 = -1*((theta(2,j)-theta(1,j))/delta);
    theta(1,j) = theta(1,j) - res2/(1/delta);
    rms = rms+res1^2+res2^2;
   end

   for i = 1:N_red
    res1 = -1*((theta(i,N_red)-theta(i,N_red-1))/delta +
 Biot*theta(i,N_red));
    theta(i,N_red) = theta(i,N_red) + res1/(Biot+1/delta);
    res2 = -1*((theta(i,2)-theta(i,1))/delta);
    theta(i,1) = theta(i,1) - res2/(1/delta);
    rms = rms+res1^2+res2^2;
   end

   rms = (rms^0.5)/N_red;
   %disp(rms);
```

```
    if(rms<epsilon)
     flag=0;
     %disp("ho gaya");
     break;
    end
   end
   theta_init = theta;
   t = t+delta_t;
   Soln = [Soln,theta(1,1)];
  end
  plot(linspace(0,1,n_plot-1), Soln);
  hold all;
end

legend('Biot 0', 'Biot 0.1', 'Biot 0.5', 'Biot 1.0', 'Biot 2.0');
xlabel = "Non-dim Time";
ylabel = "Non-dim Temperature";
```



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