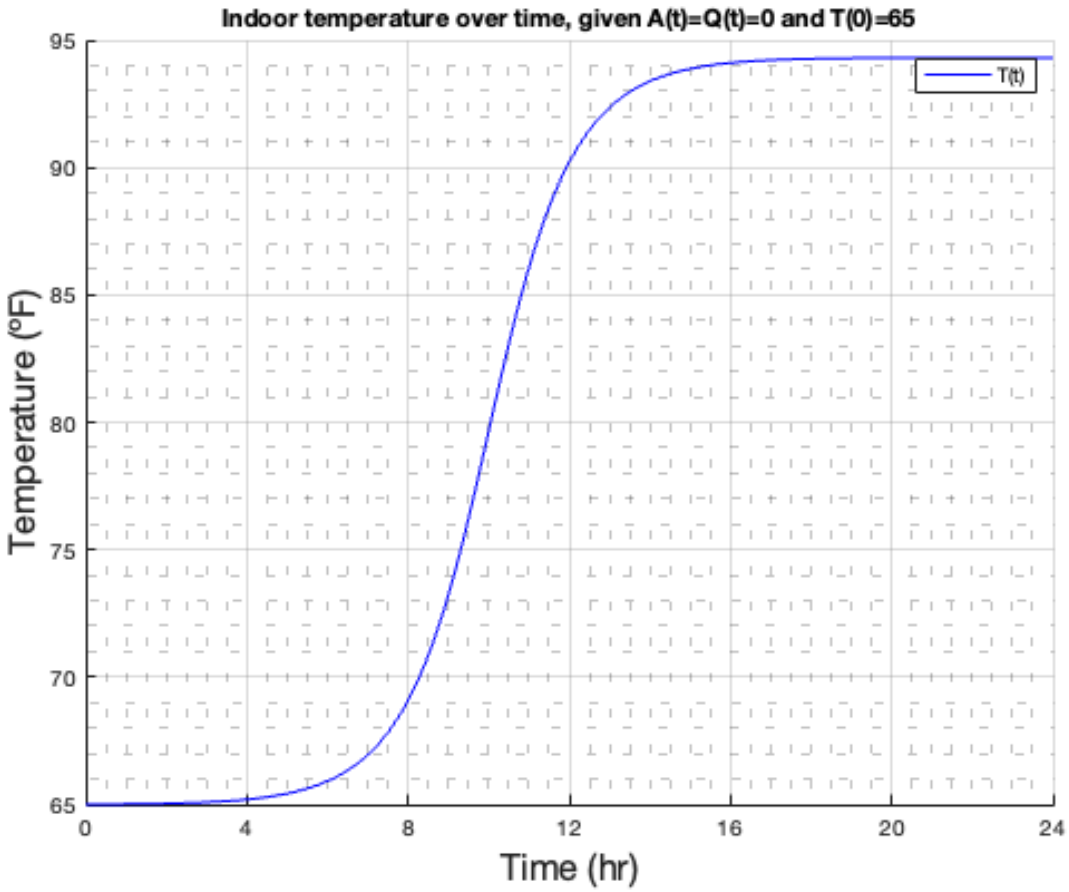
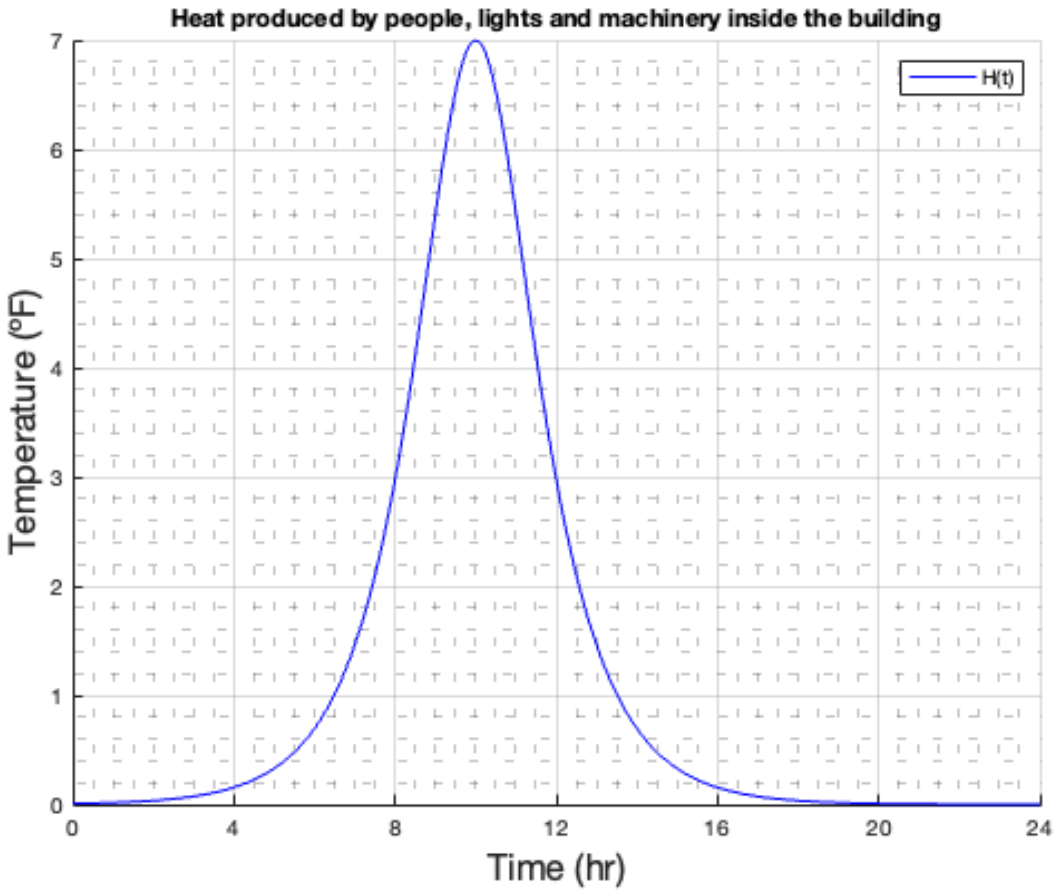
```
%4 task set D

ti=0;
tf=24;
npts=240;
T0=65;

th=0:.1:24;
H=7*sech((3/4)*(th-10));

[out1,out2]=rk4(ti,tf,npts,T0,@differential);

maxIndoor = max(out2,[],'all'); %94.3107
indexOfmaxIndoor = find(out2==maxIndoor);%241
timeOfmaxIndoor = out1(indexOfmaxIndoor);%24


%T(t)
figure(1);
hold on
plot(out1,out2,'blue');
title('Indoor temperature over time, given A(t)=Q(t)=0 and T(0)=65')
xlabel('Time (hr)','FontSize',16)
ylabel('Temperature (°F)','FontSize',16)
legend('T(t)')
xticks(0:4:24)
xlim([0 24])
grid on
grid minor
hold off

%H(t)
figure(2);
hold on
plot(th,H,'blue');
title('Heat produced by people, lights and machinery inside the building')
xlabel('Time (hr)','FontSize',16)
ylabel('Temperature (°F)','FontSize',16)
legend('H(t)')
xticks(0:4:24)
xlim([0 24])
grid on
grid minor
hold off

function f = differential(t,T);
f=7*sech((3/4)*(t-10));
end
```


Indoor temperature over time, given A(t)=Q(t)=0 and T(0)=65
T(t)
Temperature (°F)
Time (hr)
95
90
85
80
75
70
65
0
4
8
12
16
20
24



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