

```

1 % Task Set F - Question 4
2 clc;
3 close all;
4
5 h = 0.1;
6 t = 0:h:72;
7 N = length(t);
8 T = zeros(1, N);
9 T(1) = 75;
10
11 f = @(t, T) 0.25 * (85 - 10 * cos((pi * (t - 5)) / 12) - T) + 7 * sech((3/4)*(t - 10)) +
12     2 * (77 - T);
13 for n = 1:N-1
14     k1 = f(t(n), T(n));
15     k2 = f(t(n) + h/2, T(n) + h*k1/2);
16     k3 = f(t(n) + h/2, T(n) + h*k2/2);
17     k4 = f(t(n) + h, T(n) + h*k3);
18     T(n+1) = T(n) + (h/6)*(k1 + 2*k2 + 2*k3 + k4);
19 end
20
21 % Plot
22 figure;
23 plot(t, T, 'ro');
24 hold on;
25 xlabel('t');
26 ylabel('T(t)');
27 legend('RK4 Approximation');
28 title('Task Set F - Q4');
29
30 disp('Max T:');
31 disp(max(T));
32
33 m = 85 - 10 * cos((pi * (t - 5)) / 12);
34 plot(t, m, 'b-');
35 legend('RK4 Approximation', 'm(t)');
36

```