```
 1  time_start = 0;
 2  time_final = 2;
 3  t_step = 5000;
 4    R = 4.99e3;
 5  C = 3.35e-6;
 6  k = 1/(R*C);
 7
 8
 9  %% Base
10
11 vin_t = linspace(time_start,time_final,t_step);
12 freq = 1*2*pi;
13 vin=sin(vin_t*freq);
14
15 Tspan = [time_start time_final];
16
17 IC = 0;
18
19 options=odeset('RelTol',1e-4);
20
21 [vout_t,vout]=ode45(@(t,y)ode_RC(t,y,vin_t,vin),Tspan,IC,options);
22
23 figure(1);
24 plot(vout_t, vout)
25 title("Vout v. Time base");
26
27 %% 1Hz
28
29 vin_t = linspace(time_start,time_final,t_step);
30 freq = 1;
31 vin=sin(vin_t*freq);
32
33 Tspan = [time_start time_final];
34
35 IC = 0;
36
37 options=odeset('RelTol',1e-4);
38
39 [vout_t,vout]=ode45(@(t,y)ode_RC(t,y,vin_t,vin),Tspan,IC,options);
40
41 figure(2);
42 plot(vout_t, vout)
43 title("Vout v. Time base 1Hz");
44
45
46 %% 10 Hz
47
48 vin_t = linspace(time_start,time_final,t_step);
49 freq = 10;
50 vin=sin(vin_t*freq);
```

```
51
52 Tspan = [time_start time_final];
53
54 IC = 0;
55
56 options=odeset('RelTol',1e-4);
57
58 [vout_t,vout]=ode45(@(t,y)ode_RC(t,y,vin_t,vin),Tspan,IC,options);
59
60 figure(3);
61 plot(vout_t, vout)
62 title("Vout v. Time base 10Hz");
63
64 %% 50 Hz
65 vin_t = linspace(time_start,time_final,t_step);
66 freq = 50;
67 vin=sin(vin_t*freq);
68
69 Tspan = [time_start time_final];
70
71 IC = 0;
72
73 options=odeset('RelTol',1e-4);
74
75 [vout_t,vout]=ode45(@(t,y)ode_RC(t,y,vin_t,vin),Tspan,IC,options);
76
77 figure(4);
78 plot(vout_t, vout)
79 title("Vout v. Time base 50Hz");
80 axis([0 0.1 -1 1])
81
82
```