

# Homework2.5

Blue

20230118

## 1 Solve a differential equations.

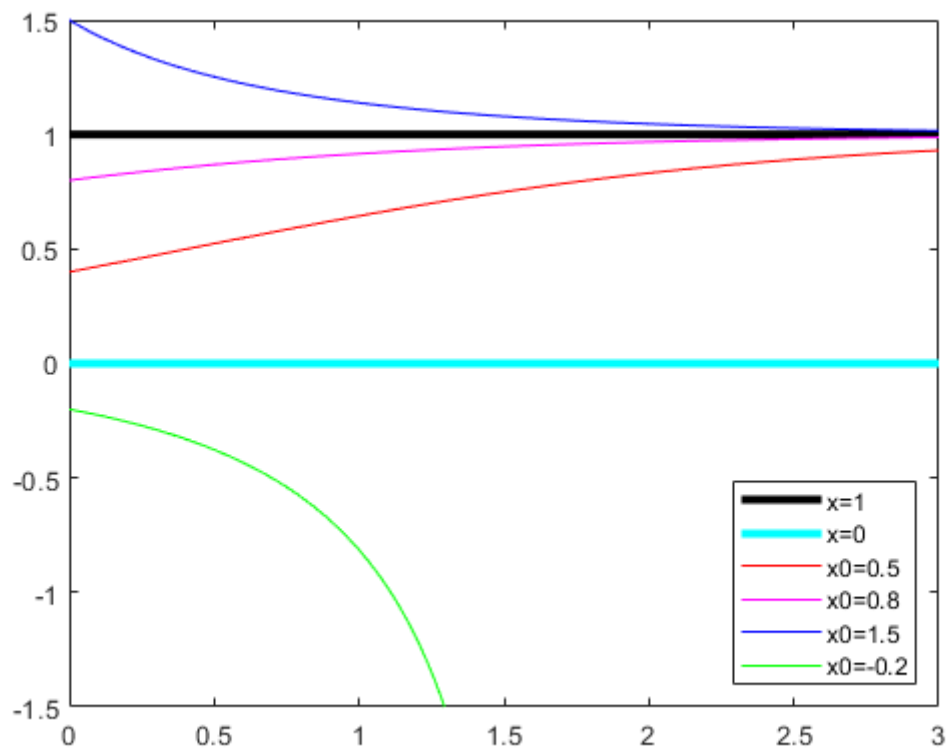


Figure 1: result

I choose 4 initial value, and get the results above. They behave the same as problem 3.a.1.

## 2 code

```
1 t0=linspace(0,6,601);
2 x2=0*t0;
3 x1=0*t0+1;
4 plot(t0,x1,'Color','k','DisplayName','x=1','linewidth',3)
5 hold on
6 plot(t0,x2,'Color','c','DisplayName','x=0','linewidth',3)
7 ploty(0.4,0.01,3,'r','x0=0.5')
```

```

8  ploty(0.8,0.01,3,'m','x0=0.8')
9  ploty(1.5,0.01,3,'b','x0=1.5')
10 ploty(-0.2,0.01,1.3,'g','x0=-0.2')
11 axis([0,3,-1.5,1.5])
12 legend('Location','southeast')
13 hold off
14
15 function ploty(x0,h,ends,linecolor,xname)
16 tv=linspace(0,ends,ends/h+1);
17 xv=linspace(0,ends,ends/h+1);
18 tv(1)=0;
19 xv(1)=x0;
20 for i=2:ends/h+1
21     tv(i)=h*(i-1);
22     xv(i)=xv(i-1)+h*cal(xv(i-1));
23 end
24 plot(tv,xv,'Color',linecolor,'DisplayName',xname)
25 end
26
27 function xpr=cal(x)
28 xpr=x*(1-x);
29 end

```