

hw3

October 2, 2018

1 CSE 804: Modeling & Visualization

2 HW 3

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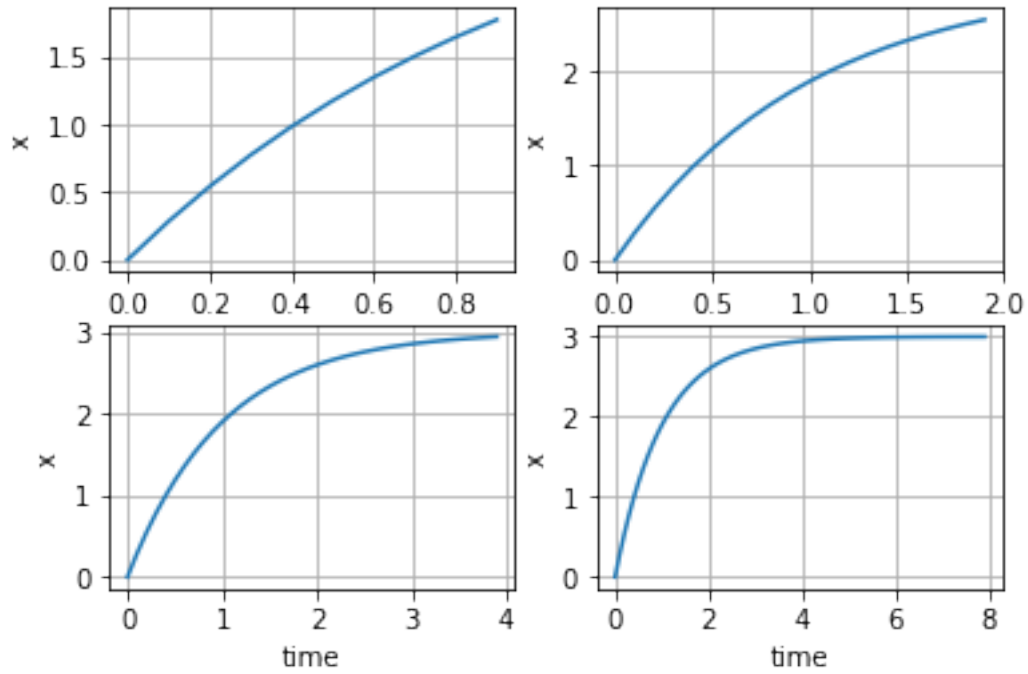
4 Banner Id: 950363260

```
In [52]: from pylab import *
         from scipy.integrate import odeint
         %matplotlib inline
```

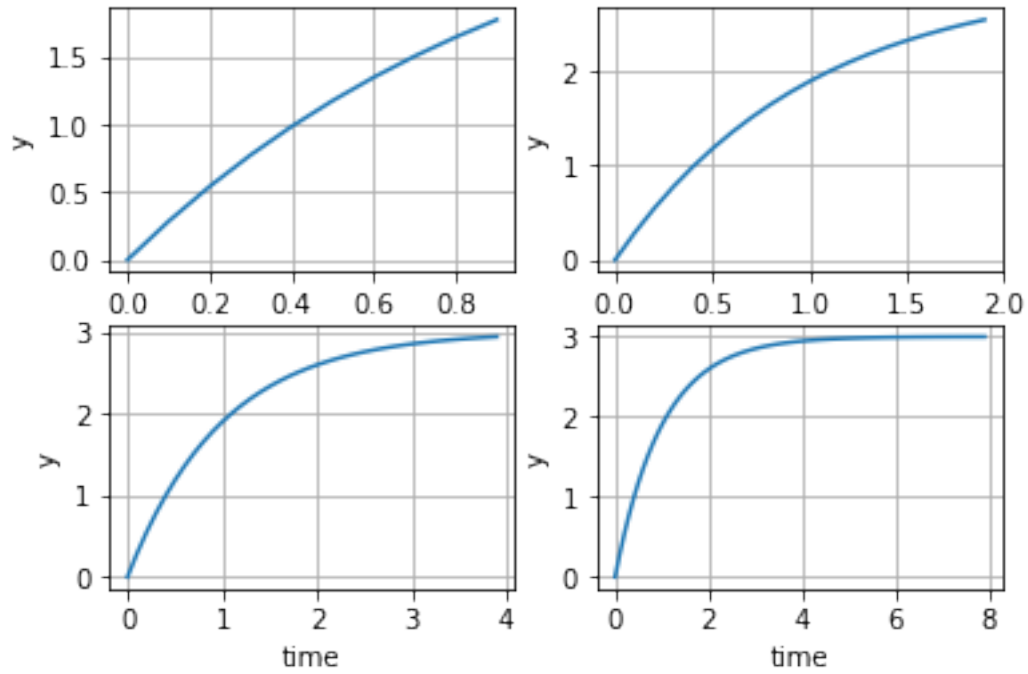
```
In [53]: # define differential equations
         def eqn1(x,t):
             x_dot = 3*exp(-t)
             return x_dot

         def eqn2(y,t):
             y_dot = 3 - y
             return y_dot
```

```
In [54]: tmax = [1,2,4,8]
         for i in range(len(tmax)):
             # define initial values
             x0 = 0
             # define time t
             t = arange(0,tmax[i],0.1)
             # solve the differential equation
             x = odeint(eqn1,x0,t)
             subplot(2,2,i+1)
             # plot the output
             plot(t,x)
             grid()
             xlabel('time')
             ylabel('x')
```



```
In [55]: for i in range(len(tmax)):
# define initial values
y0 = 0
# define time t
t = arange(0,tmax[i],0.1)
# solve the differential equation
y = odeint(eqn2,y0,t)
subplot(2,2,i+1)
# plot the output
plot(t,y)
grid()
xlabel('time')
ylabel('y')
```



- 5 From the two set of plots, we see that both solutions are equivalent and both x and y converges to 3 while t goes to infinity.