
Yijia Chen Balliol Problem Sheet 3

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Q1

```
syms u(t)
ode = (t+1)^2 * diff(u,t,2)-3*(t+1)*diff(u,t)+t == 1;
d1 = diff(u,t);
y1 = dsolve(ode,u(0)==1,d1(0)==1)
```

y1 =

$t/3 - \log(t + 1)/2 + (7*(t + 1)^4)/24 + 17/24$

Q2

by hand $(t+1)^2 * dv/dt - 3*(t+1)*v = 1-t$

Q3

ode_example

hold on no need

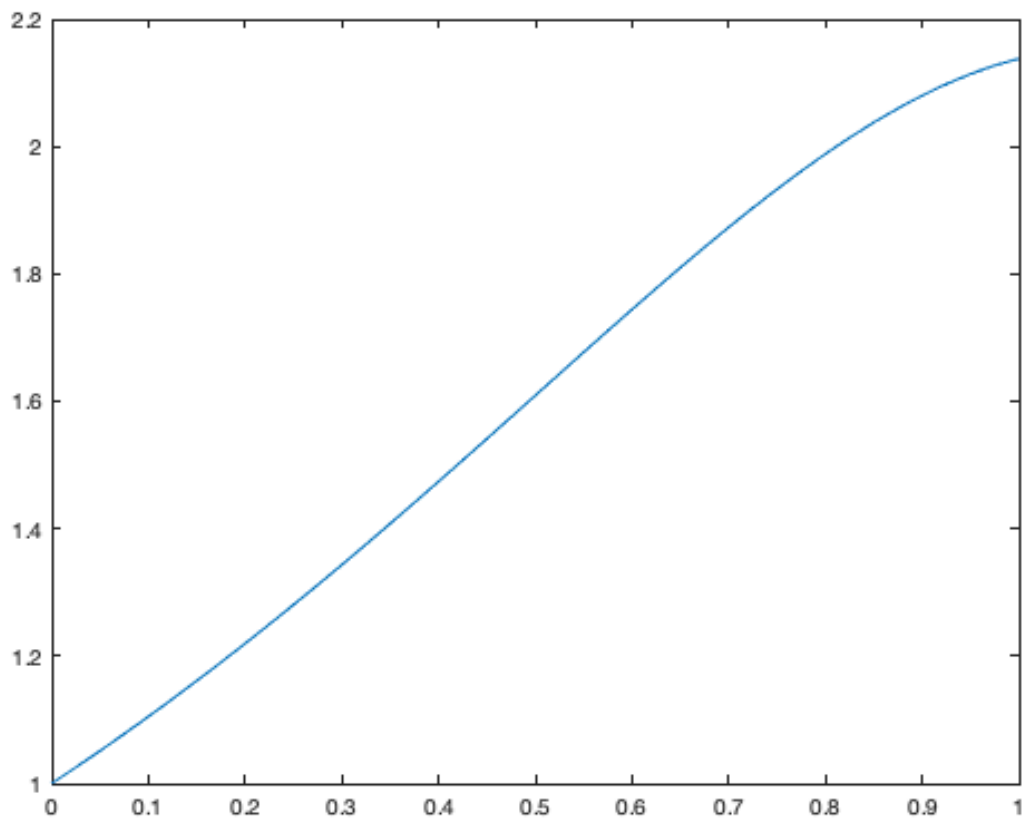
ans =

0
0.0250
0.0500
0.0750
0.1000
0.1250
0.1500
0.1750
0.2000
0.2250
0.2500
0.2750
0.3000
0.3250
0.3500
0.3750

no need print out

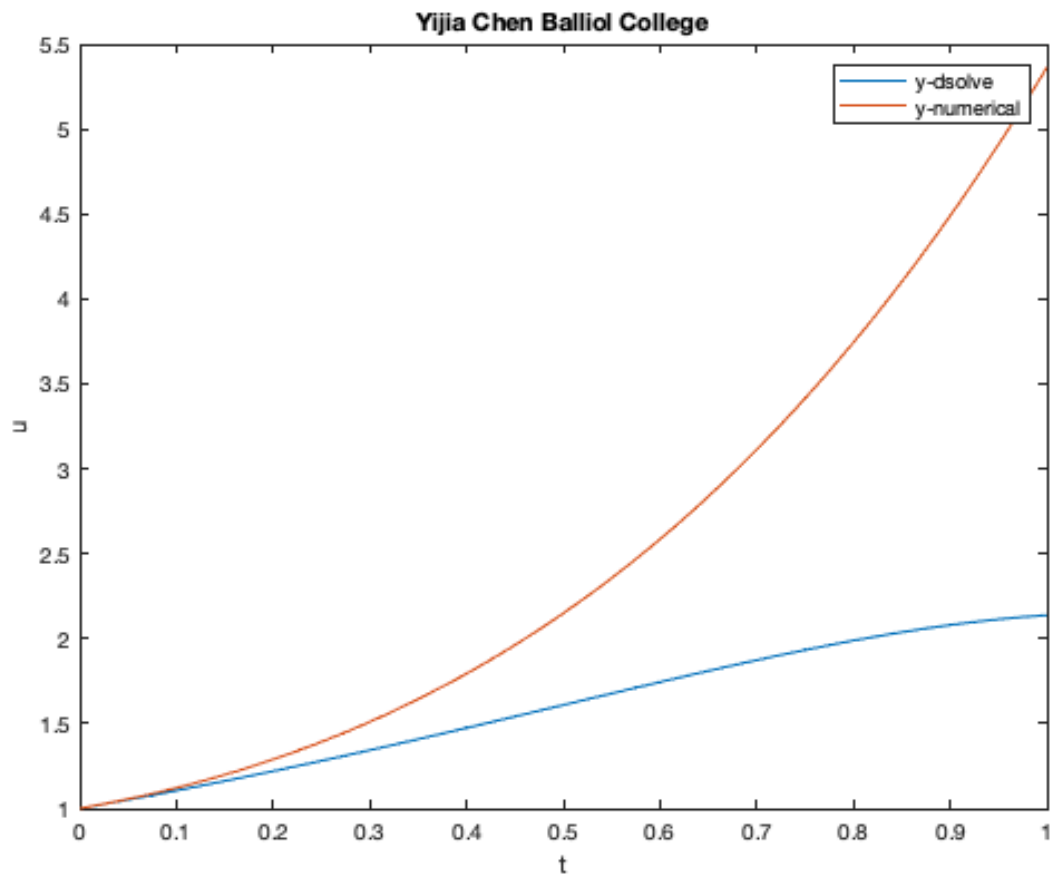
0.4000
0.4250
0.4500
0.4750
0.5000
0.5250
0.5500
0.5750
0.6000
0.6250
0.6500
0.6750
0.7000
0.7250
0.7500
0.7750
0.8000
0.8250
0.8500
0.8750
0.9000
0.9250
0.9500
0.9750
1.0000

label, title, legend?



Q4

```
fplot(y1,[0,1])  
title('Yijia Chen Balliol College')  
xlabel('t')  
ylabel('u')  
legend('y-dsolve','y-numerical')
```



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