

Matlab code for the solution of AIO Chp. 5 Ex. 3 b

First, we define the consumption and the wealth path as functions:

```
function c = fct_conso(t,c0, rho, paras)

% paras

ct = paras(1); r = paras(2); s = paras(3); a0 = paras(4); at = paras(5); w =
paras(6); T = paras(7);

% function
c = c0 .*exp((r-rho) .* (t-s));
end
```

```
function a = fct_wealth(t,c0, rho, paras)

% paras

ct = paras(1); r = paras(2); s = paras(3); a0 = paras(4); at = paras(5); w =
paras(6); T = paras(7);

% function
a = exp(r .* (t-s)) .* (a0+(w ./r)-(c0 ./rho))+(c0 .*exp((r-rho) .* (t-s)))
./rho-(w ./r);
end
```

Second, we draw both functions for three different cases

- $\rho > r$
- $\rho = r$
- $\rho < r$

```
%% preliminaries

% other
clear all
close all

%% paras

ct=1;
rho=[0.01 0.05 0.1];
r=0.05;
s=0;
a0=1
at=0;
w=1;
T=67;
```

```

paras = [ct,r,s,a0,at,w,T];
% ct = paras(1); r = paras(2); s = paras(3); a0 = paras(4); at =
paras(5); w = paras(6); T = paras(7);

c0=rho ./ (exp((r-rho) .*T)-exp(r .*T)).*(at-a0 .*exp(r .*T)+(w ./r) .* (1-exp(r
.*T)))

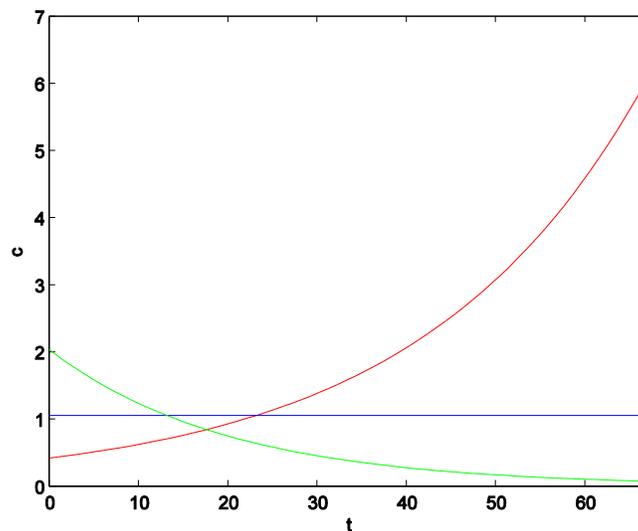
%% function

t = linspace(0,100);

%% plot

Fig1 = figure(1);
plot(t,fct_conso(t,c0(1),rho(1),paras), 'red')
hold on
plot(t,fct_conso(t,c0(2),rho(2),paras))
hold on
plot(t,fct_conso(t,c0(3),rho(3),paras), 'green')
xlabel('t');
ylabel('c');
xlim([0 67]);
ylim([0 7]);

```



```

%% preliminaries

% other
clear all
close all

%% paras

ct=1;
rho=[0.01 0.05 0.1];
r=0.05;

```

```

s=0;
a0=1
at=0;
w=1;
T=67;

paras = [ct,r,s,a0,at,w,T];
%      ct = paras(1); r = paras(2); s = paras(3); a0 = paras(4); at =
paras(5); w = paras(6); T = paras(7);

c0=rho ./ (exp((r-rho) .*T)-exp(r .*T)).*(at-a0 .*exp(r .*T)+(w ./r) .* (1-exp(r
.*T)))

%% function

t = linspace(0,67,67);

%% plot

Fig1 = figure(1);
plot(t,fct_wealth(t,c0(1),rho(1),paras),'red')
hold on
plot(t,fct_wealth(t,c0(2),rho(2),paras))
hold on
plot(t,fct_wealth(t,c0(3),rho(3),paras),'green')
xlabel('t');
ylabel('a');
xlim([0 67]);
ylim([-20 40]);

```

