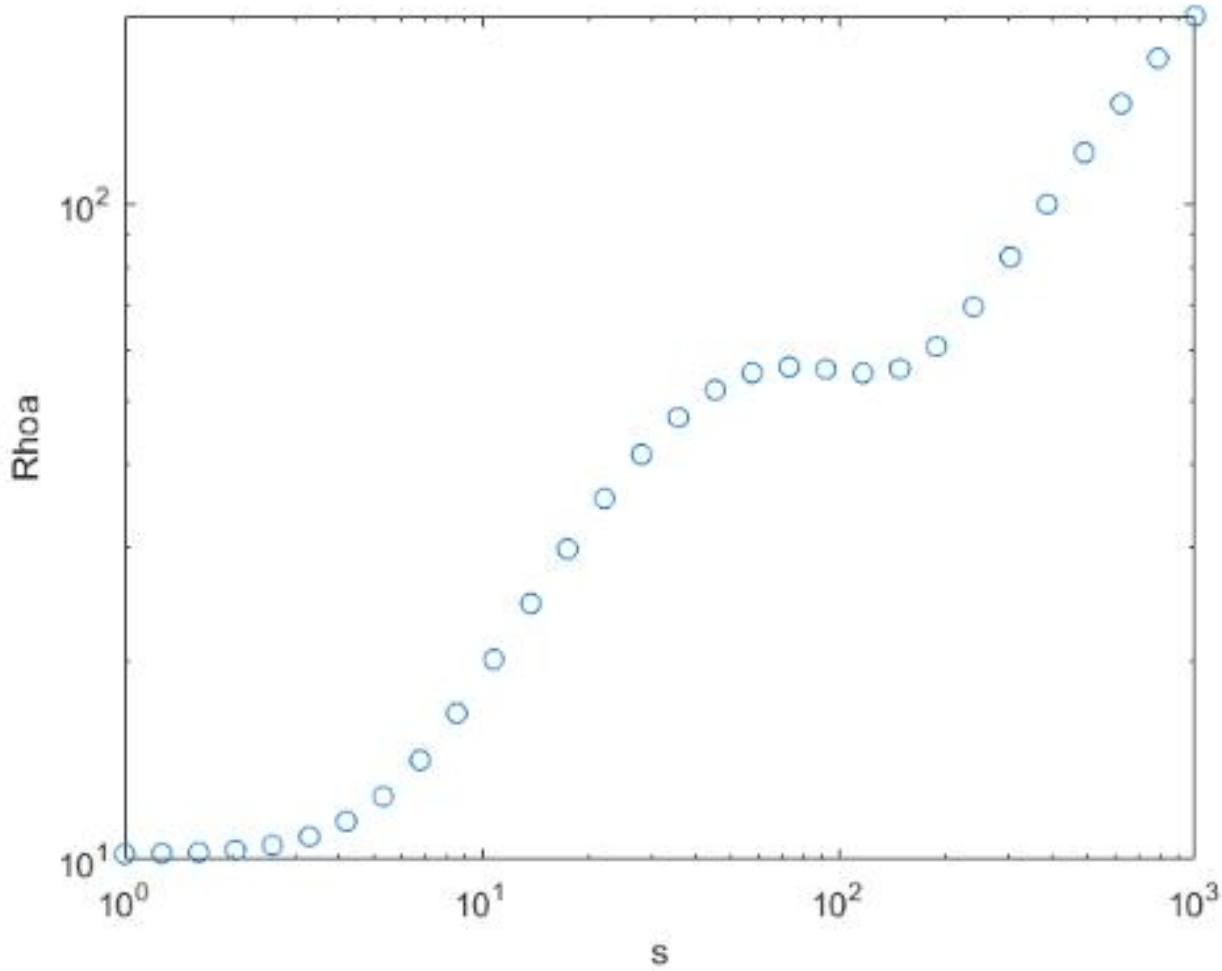
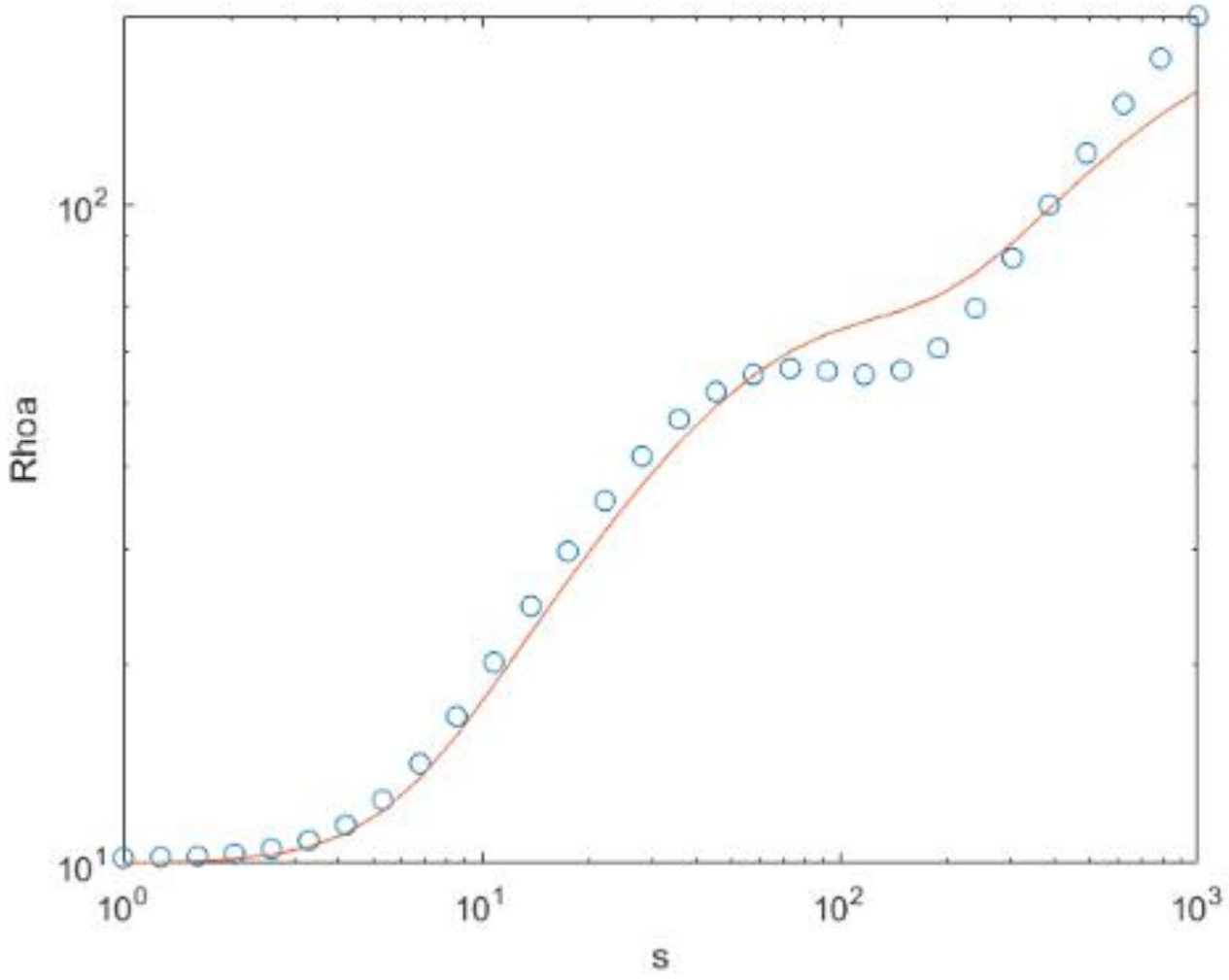
```
%18EX20030 UTKARSH JAISWAL
clear all
close all
clc
x=[1 1.269 1.6103 2.0434 2.5929 3.2903 4.1753 5.2983 6.7234 8.5317 10.826 13.738 17.433 22.122 28.072 35.622 45.204 57.362 72.79 92.367 117.21 148.74 188.74 239.5 303.92 385.66 489.39 621.02 788.05 1000];
y=[10.189 10.211 10.255 10.342 10.512 10.838 11.436 12.48 14.179 16.725 20.211 24.607 29.786 35.541 41.543 47.283 52.09 55.286 56.495 56.049 55.246 56.126 60.643 69.742 83.155 100.09 119.93 142.37 167.12 193.69];
loglog(x,y,'o')
xlabel('s')
ylabel('Rhoa')
hold on


```

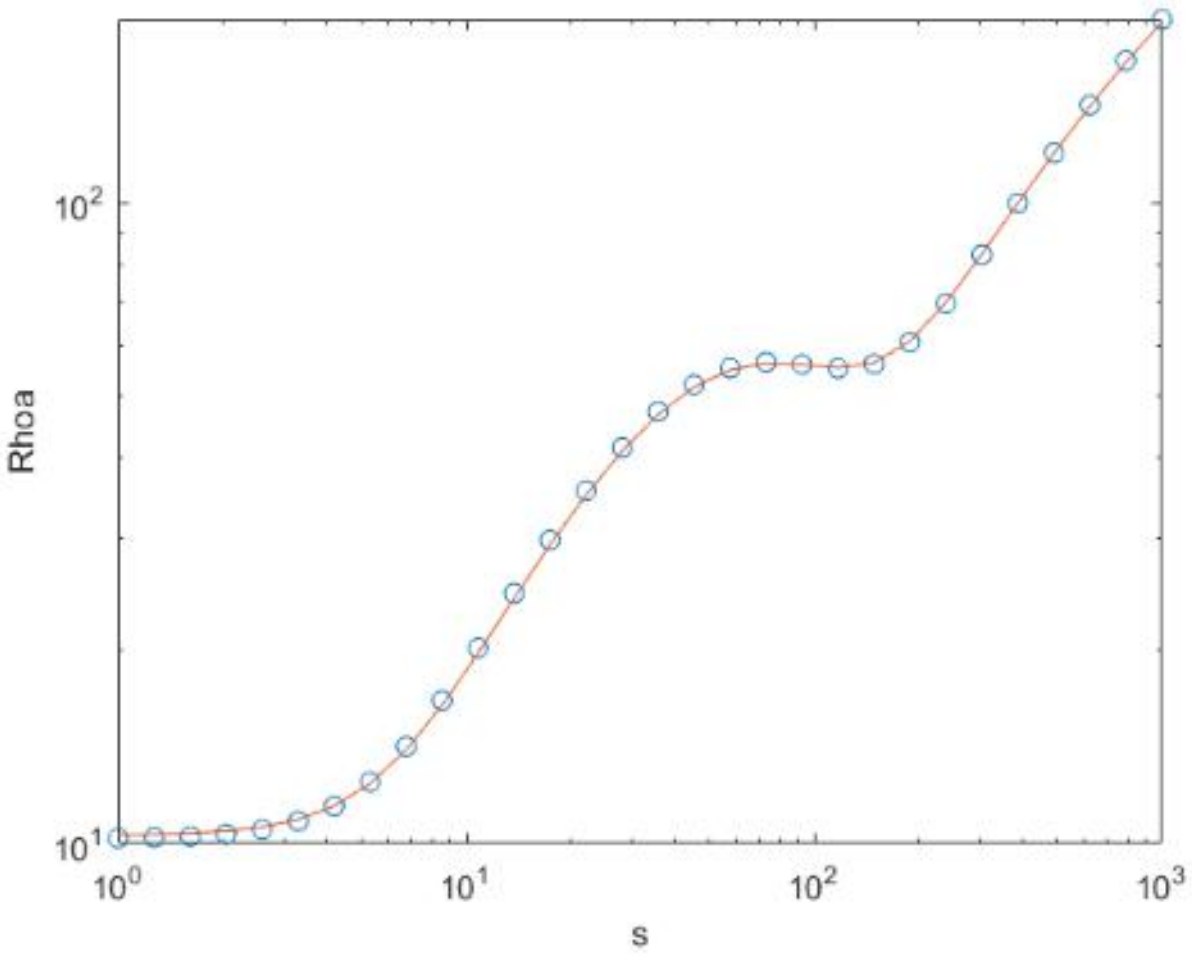

Rhoa
10^2
10^1
10^0
10^1
10^2
10^3
s

```
%18EX20030 UTKARSH JAISWAL
clear all
close all
clc
x=[1 1.269 1.6103 2.0434 2.5929 3.2903 4.1753 5.2983 6.7234 8.5317 10.826 13.738 17.433 22.122 28.072 35.622 45.204 57.362 72.79 92.367 117.21 148.74 188.74 239.5 303.92 385.66 489.39 621.02 788.05 1000];
y=[10.189 10.211 10.255 10.342 10.512 10.838 11.436 12.48 14.179 16.725 20.211 24.607 29.786 35.541 41.543 47.283 52.09 55.286 56.495 56.049 55.246 56.126 60.643 69.742 83.155 100.09 119.93 142.37 167.12 193.69];
loglog(x,y,'o')
xlabel('s')
ylabel('Rhoa')
hold on

fc=[0.00097112 -0.00102152 0.00906965 0.01404316 0.09012 0.30171582 0.99627084 1.3690832 -2.99681171 1.65463068 -0.59399277 0.22329813 -0.10119309 0.05186135 -0.02748647 0.01384932 -0.00599074 0.00190463 -0.0003216];
abs=[-0.980685 -0.771995 -0.563305 -0.354615 -0.145925 0.062765 0.271455 0.480145 0.688835 0.897525 1.106215 1.314905 1.523595 1.732285 1.940975 2.149665 2.358355 2.567045 2.775735];
s=[1 1.269 1.6103 2.0434 2.5929 3.2903 4.1753 5.2983 6.7234 8.5317 10.826 13.738 17.433 22.122 28.072 35.622 45.204 57.362 72.79 92.367 117.21 148.74 188.74 239.5 303.92 385.66 489.39 621.02 788.05 1000];
n =4;
ns=length(s);
r=[10,100,40,195];
h=[5,40,60];

rt=[];
rhoa=[];
m=length(fc);
for i=1:ns;
for j=1:m;
    lam=10^(abs(j)-log10(s(i)));
    T=r(n);
    for nu=n-1:-1:1;
        T=(T+r(nu)*tanh(lam*h(nu)))/(1+(T*tanh(lam*h(nu)))/r(nu));
    end
    rt(j)=T;
end
rho=0;
for k=1:m;
    rho=rho+fc(k)*rt(k);
end
rhoa(i)=rho;
end
loglog(s,rhoa)
e=0;
for i = 1:length(x);
   e=e+((y(i)-rhoa(i))/y(i))^2;
end
misfit=100*((e/length(x))^0.5)
```



misfit = 10.7467

```
%18EX20030 UTKARSH JAISWAL
clear all
close all
clc
x=[1 1.269 1.6103 2.0434 2.5929 3.2903 4.1753 5.2983 6.7234 8.5317 10.826 13.738 17.433 22.122 28.072 35.622 45.204 57.362 72.79 92.367 117.21 148.74 188.74 239.5 303.92 385.66 489.39 621.02 788.05 1000];
y=[10.189 10.211 10.255 10.342 10.512 10.838 11.436 12.48 14.179 16.725 20.211 24.607 29.786 35.541 41.543 47.283 52.09 55.286 56.495 56.049 55.246 56.126 60.643 69.742 83.155 100.09 119.93 142.37 167.12 193.69];
loglog(x,y,'o')
xlabel('s')
ylabel('Rhoa')
hold on

fc=[0.00097112 -0.00102152 0.00906965 0.01404316 0.09012 0.30171582 0.99627084 1.3690832 -2.99681171 1.65463068 -0.59399277 0.22329813 -0.10119309 0.05186135 -0.02748647 0.01384932 -0.00599074 0.00190463 -0.0003216];
abs=[-0.980685 -0.771995 -0.563305 -0.354615 -0.145925 0.062765 0.271455 0.480145 0.688835 0.897525 1.106215 1.314905 1.523595 1.732285 1.940975 2.149665 2.358355 2.567045 2.775735];
s=[1 1.269 1.6103 2.0434 2.5929 3.2903 4.1753 5.2983 6.7234 8.5317 10.826 13.738 17.433 22.122 28.072 35.622 45.204 57.362 72.79 92.367 117.21 148.74 188.74 239.5 303.92 385.66 489.39 621.02 788.05 1000];
n =4;
ns=length(s);
r=[10.3,550,8.1,385];
h=[5.3,5.5,20];

rt=[];
rhoa=[];
m=length(fc);
for i=1:ns;
for j=1:m;
    lam=10^(abs(j)-log10(s(i)));
    T=r(n);
    for nu=n-1:-1:1;
        T=(T+r(nu)*tanh(lam*h(nu)))/(1+(T*tanh(lam*h(nu)))/r(nu));
    end
    rt(j)=T;
end
rho=0;
for k=1:m;
    rho=rho+fc(k)*rt(k);
end
rhoa(i)=rho;
end
loglog(s,rhoa)
e=0;
for i = 1:length(x);
   e=e+((y(i)-rhoa(i))/y(i))^2;
end
misfit=100*((e/length(x))^0.5)
```




```
misfit = 0.9849
```

	Initial Model	Final Model
r1	10	10.3
r2	100	550
r3	40	8.1
r4	195	385
h1	5	5.3
h2	40	5.5
h3	60	20
% Misfit Error	10.7467	0.9849

Remarks: We took 7 model parameters in the second part since we have 4 layer curve