Appendix

```
simin = [t  y];
fineplot(t,y,'Raw Data','t','y(t)',[-1 10],[-5 110],'off',[400 400])

y_array = out.y_out.Data;
average = (mean(y_array(length(round(y_array*0.2)):end)));
fineplot(out.tout.',y_array,'Filtered Data','t','y(t)',[-1 10],[-5 110],'off',[400 400])

%lets choose the array index 310 arbitrarily
indice = 500;
tau = -out.tout(indice)/log((average-y_array(indice))/average);

t2 = linspace(0,10,100001);
y2 = average - (average * exp(-t2/tau));
fineplot(t2,y2,'Approximation of y(t)','t','y(t)',[-1 10],[-5 110],'off',[400 400])
fineplot(out.tout.',y_array,'Approximate y(t) and Filtered Data','t','y(t)',[-1 10],[-5 110],'on',[400 400])
plot(t2,y2,'LineWidth',2)
legend({'Filtered Data','','','','','','Approximation'},'Position',[0.6 0.3 0.1 0.1])
```