Homework 1, ME3215 Spring 2022

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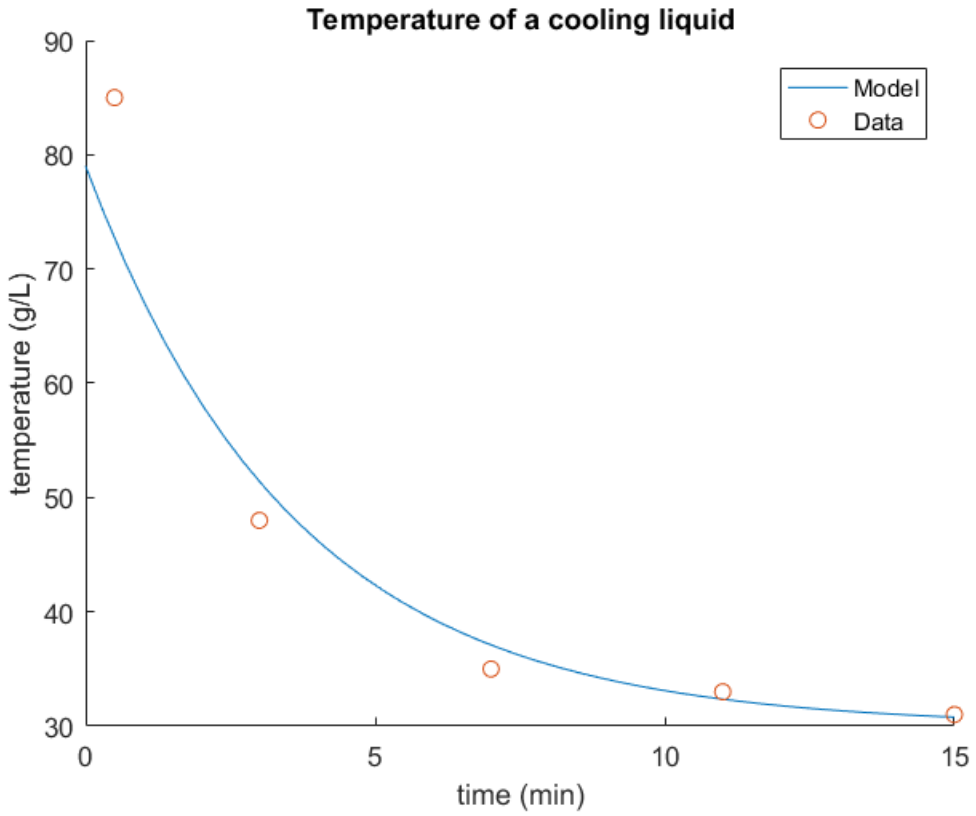
Function-functions; computing error; iteration

HW1_2 Temperature of a cooling liquid

```
clear;clc;close all
%data
t = [0.5 3 7 11 15];            %time (min)
T = [85, 48, 35, 33, 31];    %temperature (C)
%constants:
A=30; B=49; m=-0.276;
%mathematical model
f=@(t)A+B*exp(m*t);

%plotting
hold on
fplot(f,[0 15])
plot(t,T,'o')
legend('Model','Data')
xlabel('time (min)')
ylabel('temperature (g/L)')
title('Temperature of a cooling liquid')
```



HW1_3: (problem 3.13/4.1) Divide and average

```
a=15;
x = a/2;     %choose an initial guess for x
es=0.5*10^(2-4); % correct to 4 sig figs
ea=100;  % initial value of rel error must be bigger than es to enter
 the loop
while ea>es
    oldx=x;                % save previous guess
    x = (x + a/x)/2;      % make new guess
    ea = abs((x-oldx)/x)*100;    % rel error
end

fprintf('The square root of %g is %.3f\n', a, x)
```

```
The square root of 15 is 3.873
```

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