Kinkondo - Oluwegun Rowda
18/15N1605/1028

- Data given
Initial t of thermometer = 10°C
T_a = 20°C
at 5 mins

$\frac{dT}{dt} = k(T-25)$

$\frac{dt}{T-25} = k\,dt$

$\int \frac{dt}{T-25} = \int k\,dt + C$

$T-25 = e^{kT+C}$

$T-25 = T_0 e^{kT}$

$T = T_0 e^{kT} + 25$

$\therefore 10 = T_0 e^{0} + 25$

$10 = T_0 + 25$

$T_0 = 10 - 25$

$= -15°C$

At 5 mins

$20 = -15e^{5k} + 25$

$-5 = -15e^{5k}$

$e^{5k} = 0.33$

$-1.09 = 5k$

$k = -0.219$

$T = -15e^{-0.219t} + 25$

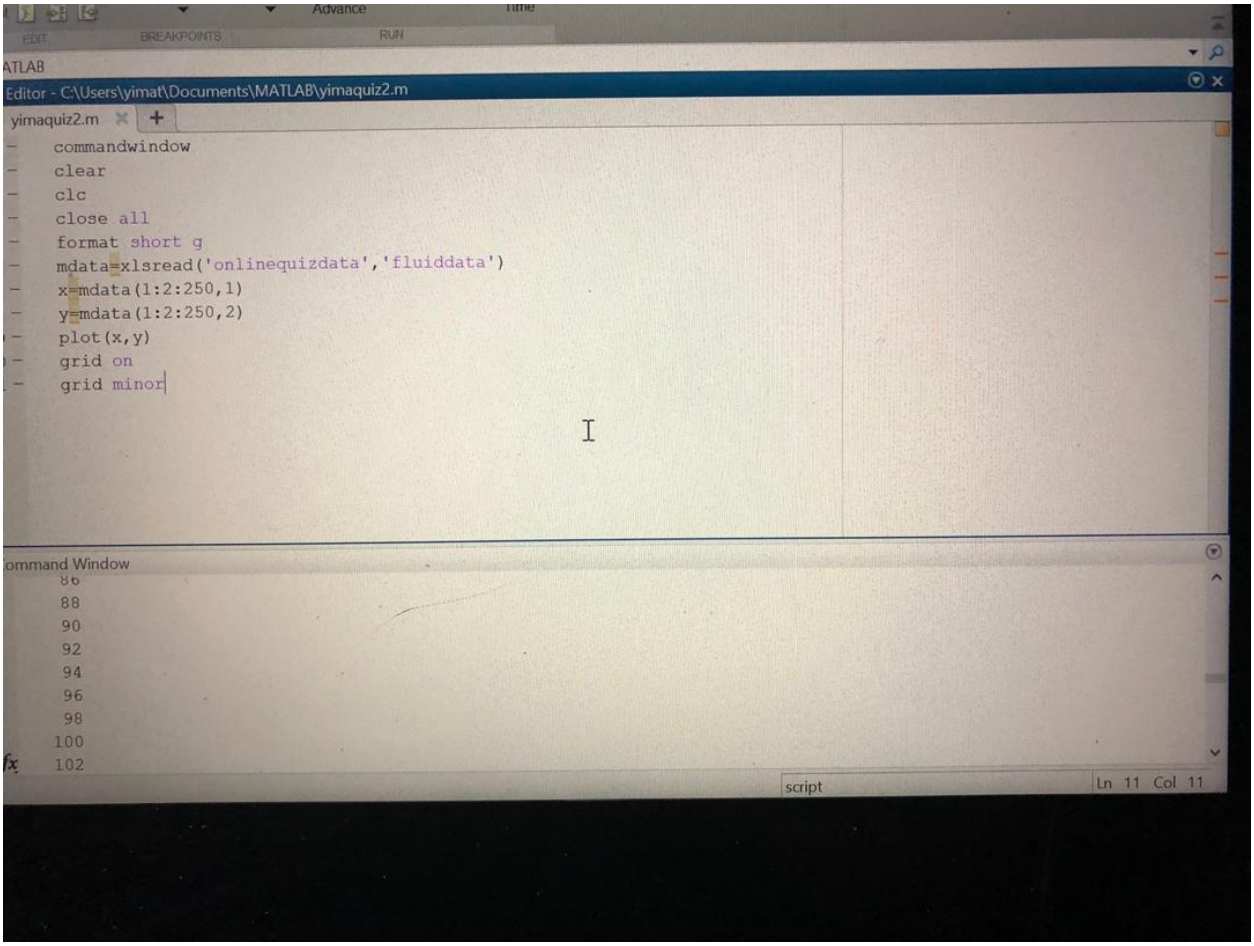
$24.9° = -15e^{0.219t} + 25$

$24.9 - 25 = -15e^{0.219t}$

$\ln(6.67 \times 10^{-2}) = -0.219t$

$t = \frac{-5.01}{-0.219}$

$t = 22.88$ secs


Advance
EDIT
BREAKPOINTS
RUN
ATLAB
Editor - C:\Users\yimat\Documents\MATLAB\yimaquiz2.m
yimaquiz2.m
commandwindow
clear
clc
close all
format short g
mdata=xlsread('onlinequizdata','fluiddata')
x=mdata(1:2:250,1)
y=mdata(1:2:250,2)
plot(x,y)
grid on
grid minor
ommand Window
86
88
90
92
94
96
98
100
102
script
Ln 11 Col 11

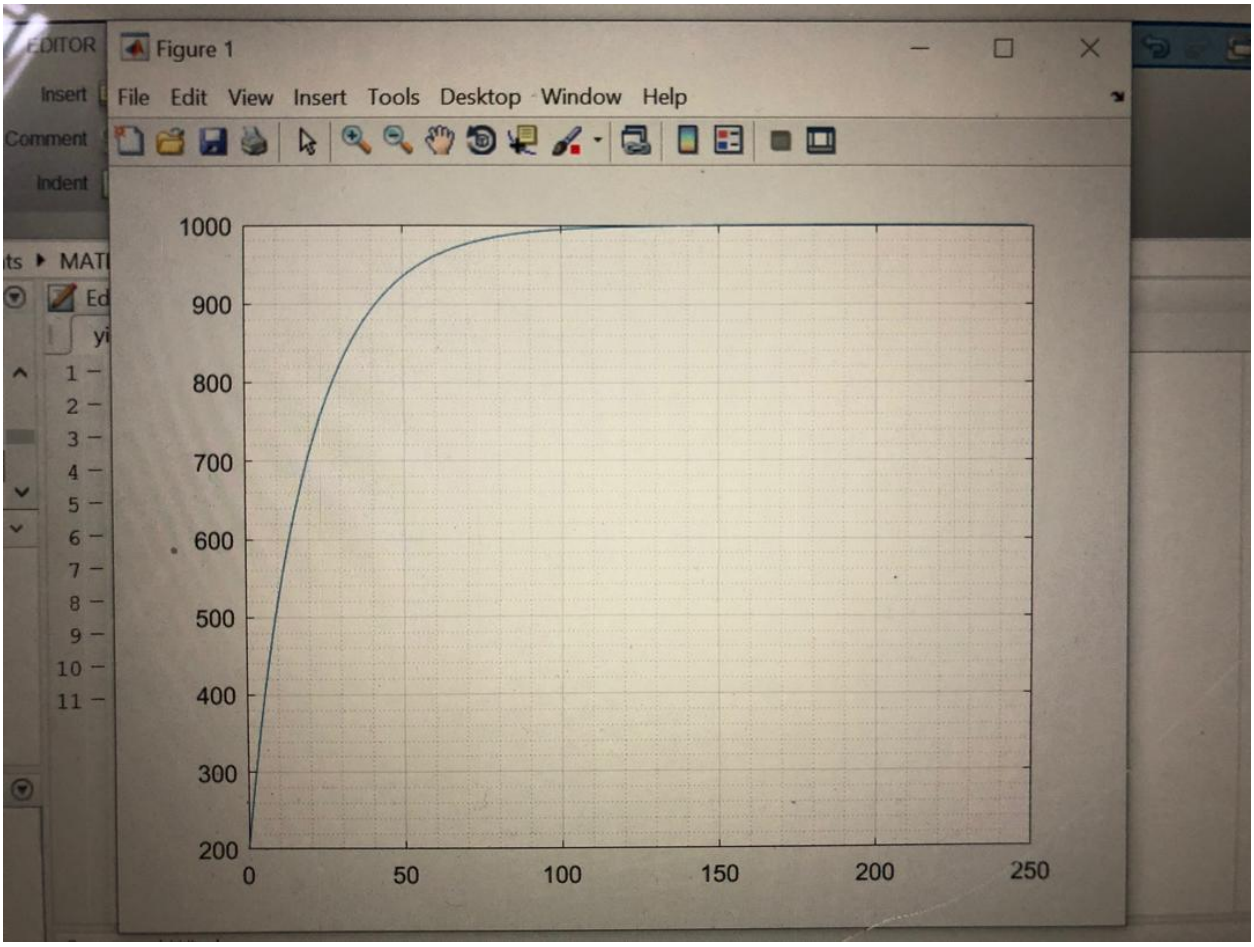


Figure 1
File Edit View Insert Tools Desktop Window Help
1000
900
800
700
600
500
400
300
200
0
50
100
150
200
250