

ALFA FATIMA AHMED

18/ENGG06/008

CHEMICAL ENGINEERING.

(1)  $\frac{dT}{dt} = k(T - 25)$  : Initial time  $T(0) = 10^\circ\text{C}$

After 5 mins =  $20^\circ\text{C}$

$\frac{dT}{(T-25)} = k dt$   $T_0 = 25^\circ\text{C}$

$$\ln(T - 25) = kt + C$$

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

$$T = T_0 e^{kt}$$

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

At  $t = 0$

$$10 = T_0 + 25$$

$$10 - 25 = T_0$$

$$T_0 = -15$$

$$T = -15e^{kt} + 25$$

$$20^\circ = -15e^{kt} + 25$$

$$\frac{-5}{-15} = \frac{-15e^{kt}}{-15}$$

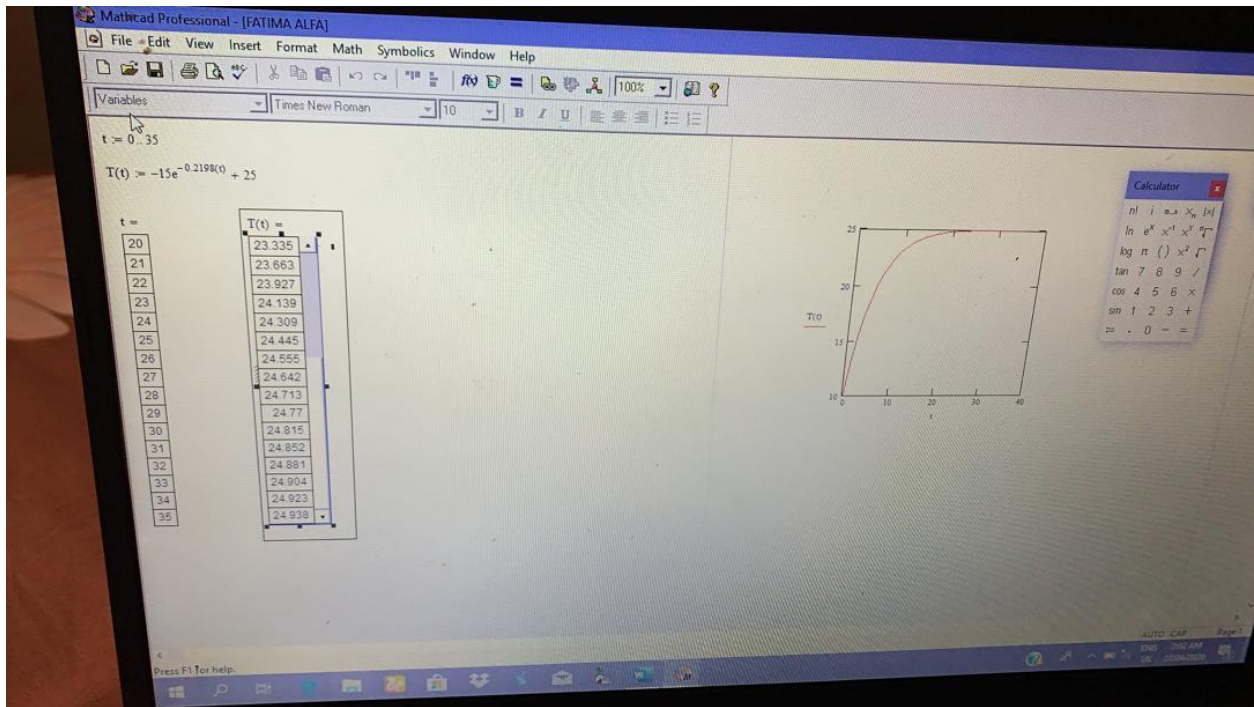
$$0.33 = e^{k5}$$

$$-1.09 = k5$$

$$k = -0.219$$

$$T = -154^{-0.219t} + 25$$

$$T = -154^{-0.219t} + 25$$



```
- 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
```

I

Command Window

```
86
88
90
92
94
96
98
100
102
```

script

Ln 11 Col 11

