

Quiz

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19/11/2021

Ex 6.82

Question 1

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

At

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

T - 25

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

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

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

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

At t = 0

$$10 = T_0 + 25$$

$$10 - 25 = T_0$$

$$\therefore T_0 = -15$$

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

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

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

$$0.33 = e^{kt}$$

$$-1.09 = k \cdot 5$$

$$\therefore k = \frac{-1.09}{5} = -0.218$$

5

$$T = -15e^{-0.218t} + 25$$

```
1 - commandwindow
2 - clear
3 - clc
4 - close all
5 - format short g
6 - mdata=xlsread('onlinequizdata','fluiddata')
7 - x=mdata(1:2:250,1)
8 - y=mdata(1:2:250,2)
9 - plot(x,y)
10 - grid on
11 - grid minor
```

## Command Window

999.99

999.99

999.99

999.99

999.99

999.99

999.99

1000

1000

1000

1000

1000

A2



Type here to search



Figure 1

File Edit View Insert Tools Desktop Window Help

