

TAIWO DAMILOCA

18/ENG 05/058

Mechatronics

1) Initial temp = 10°C at 0°C

5 min = 20°C

actual temperature = 25°C

? min = 24.9

$$\text{at } 5 \text{ min} = \frac{20 + 25}{2} = 22.5^{\circ}$$

$$y = y_0 e^{kt}$$

$$22.5 = 10e^{k5}$$

$$2.25 = e^{5k}$$

$$\ln 2.25 = 5k$$

$$k = \frac{\ln 2.25}{5}$$

$$k = 0.162$$

$$24.9 = 10e^{0.162t}$$

$$\frac{24.9}{10} = e^{0.162t}$$

$$2.49 = e^{0.162t}$$

$$\ln 2.49 = 0.162t$$

$$t = \frac{\ln 2.49}{0.162}$$

$$t = 5.63 \text{ min}$$

```
yimaquiz2.m x +  
- 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