

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

$$1. T = 10^\circ\text{C} \quad T = 20^\circ\text{C}$$

$$\frac{dT}{dt} = h(T - T_A)$$

$$\frac{dT}{T - T_A} = h(T - T_A)$$

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

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

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

$$\therefore T - 25 = e^{h(T - 25) + C}$$

$$T - 25 = e^{h(T - 25)} \cdot e^C$$

$$T - 25 = A e^{h(T - 25)}$$

$$T = A e^{h(T - 25)} + 25$$

at initial condition, $t = 0$

$$10 = A e^{h(0 - 25)} + 25$$

$$A = 35$$

$$T = 35 e^{h(T - 25)} + 25$$

$$15 = 35 e^{h(15 - 25)}$$

$$e^{5h} = \frac{15}{35}$$

$$5h = \ln\left(\frac{15}{35}\right)$$

$$h = \frac{0.05}{5} ; h = 0.01$$

$$T = 35 e^{0.01t} + 25$$

$$\Rightarrow T = 24.9 \text{ at } t = 7$$

$$24.9 = 35 e^{0.01t} + 25$$

$$-0.1 = 35 e^{0.01t}$$

$$e^{0.01t} = \frac{-0.1}{35}$$

$$e^{0.01t} = \ln(-0.126)$$

$$0.01t = \ln(-0.126)$$

$$t = 7.1 \text{ minutes}$$

Figure 1

File Edit View Insert Tools Desktop Window Help

