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Quiz

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

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

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

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

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

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

$$\text{At } t = 0$$

$$10 = T_0 + 25$$

$$10 - 25 = T_0$$

$$-15 = T_0$$

$$T_0 = -15$$

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

$$20 = -15e^{k5}$$

$$\frac{-5}{-15} = \frac{-15e^{k5}}{-15}$$

$$0.33 = e^{k5}$$

$$-1.09 = k5$$

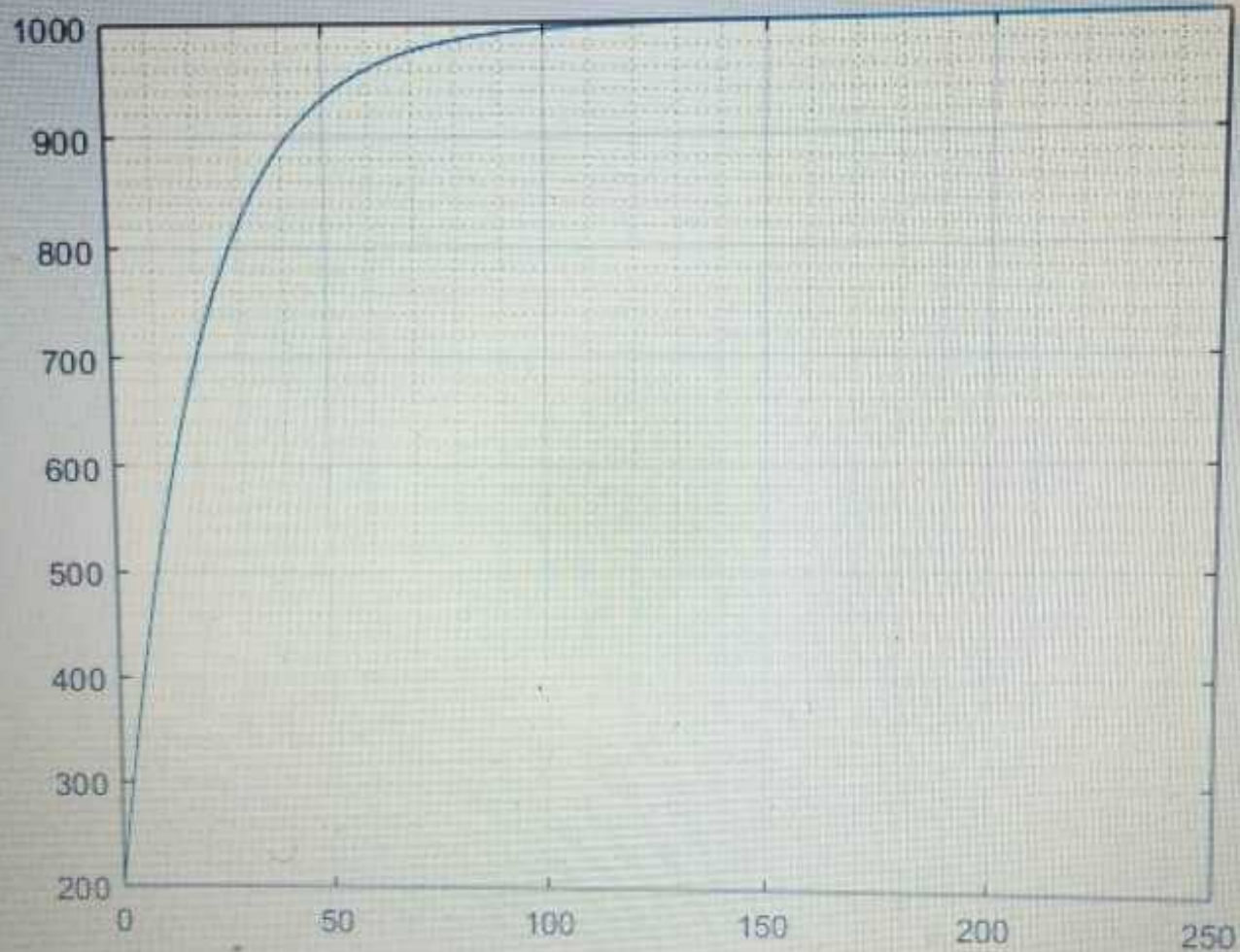
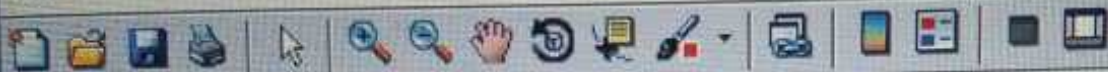
$$k = -0.219$$

$$k = -0.219$$

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

Figure 1

File Edit View Insert Tools Desktop Window Help



```
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

```
mdata =
      0      200
      1    279.96
      2    276.13
      3    313.86
      4    345.02
      5    327.9
      6    407.05
      7    468.14
      8    463.74
      9    506.86
     10    514.78
```