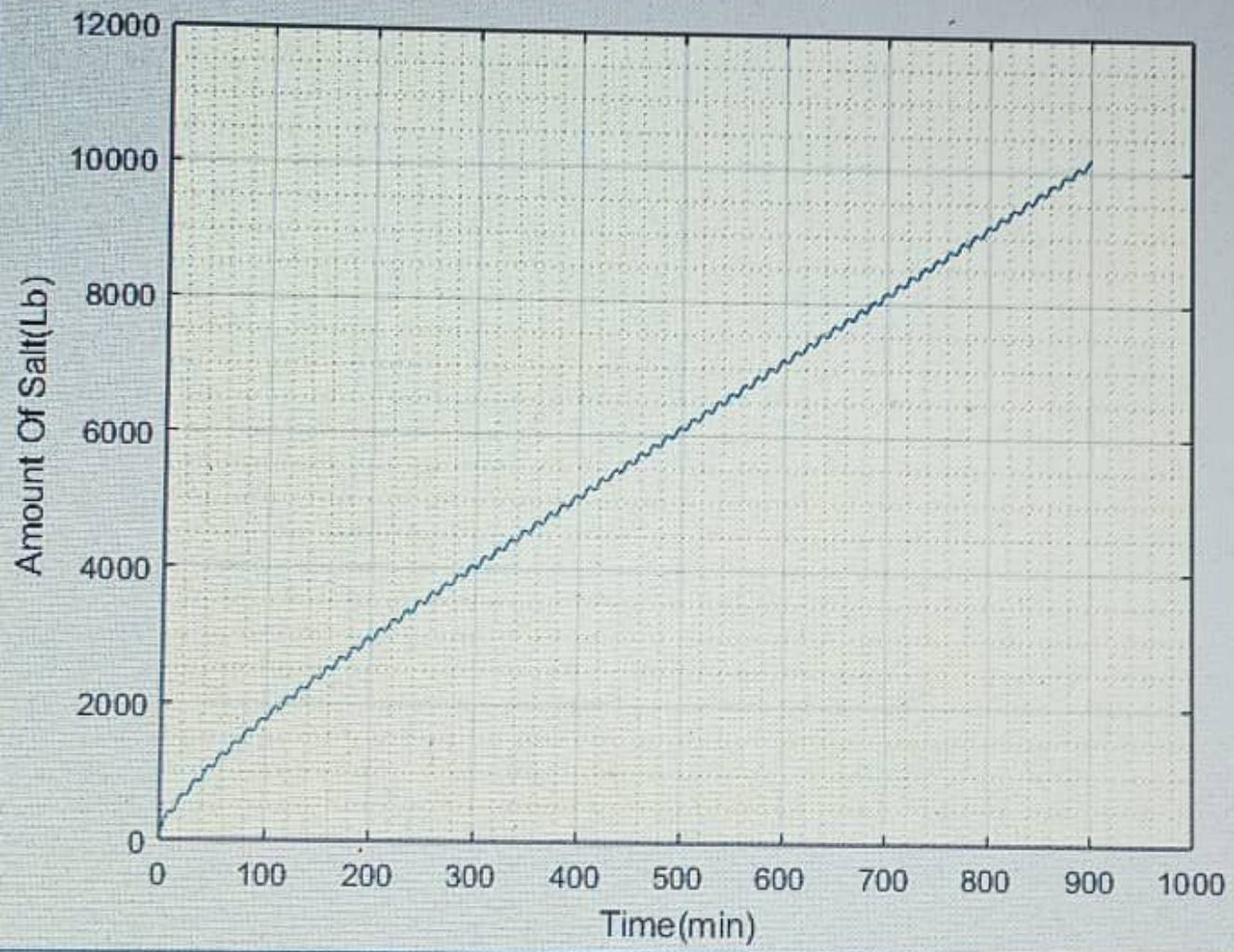
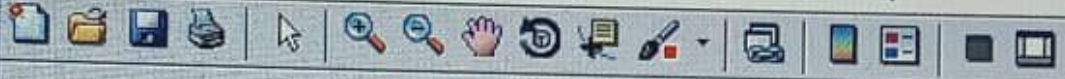


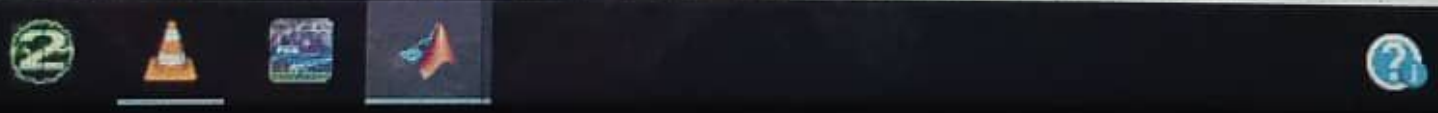
Run Section

Figure 1

File Edit View Insert Tools Desktop Window Help



, true, 'IgnoreAnalyticConstraints', true)/(t + 60)^(3/2) + (9000*60^(1/2)





C:\Users\HP\Documents\MATLAB

Editor - C:\Users\HP\Documents\MATLAB\Ekundayoassignment2.m

Ekundayoassignment.m x Ekundayoassignment2.m x +

```
1 - commandwindow
2 - clear
3 - clc
4 - close all
5 - format short g
6 - syms t
7 - y=(50/0.05)+((50/1.0025)*sin(t))+((50*0.05/1.0025)*cos(t))-(502.49*exp(-0.05*t))
8 - ym=1000-(800*exp(-0.05*t))
9 - t=0:1:500
10 - t1=t(2:2:500)
11 - t2=t(1:2:500)
12 - Y=subs(y,t1)
13 - Ym=subs(ym,t2)
14 - mdata={'T(min)', 'V(Litre)';Y,Ym)
15 - plot(t1,Y,t2,Ym)
16 - grid on
17 - grid minor
```

Command Window

Columns 136 through 162

135 136 137 138 139 140 141 142 143 144 145 146 147 148 149

Columns 163 through 189

162 163 164 165 166 167 168 169 170 171 172 173 174 175 176

Type here to search



Name: Ekwadayo Okwatorobi favour

Matr No: 12/ENAO1010

Dept: Chemical engineering

Assignment

$$1) \quad \frac{dm}{dt} = m_{in} - m_{out}$$

$$m_{in} = 50 \times (1 + \sin t)$$

$$m_{out} = 30 \times \left(\frac{m}{120 + 2t} \right)$$

$$\frac{dm}{dt} = 50(1 + \sin t) - \frac{3m}{120 + 2t}$$

$$\frac{dm}{dt} + \frac{3m}{120 + 2t} = 50(1 + \sin t)$$

Using I.F

$$\frac{dy}{dx} + py = Q$$

dx

$$P = \frac{3}{120 + 2t}, \quad Q = 50(1 + \sin t)$$

$$\int P dx = 3 \ln(120 + 2t)$$

$$I.F = e^{\int P dx} = e^{3 \ln(120 + 2t)} = (120 + 2t)^3$$

$$I.F = (120 + 2t)^3$$

$$y \cdot I.F = \int Q \cdot I.F dx$$

$$m(120 + 2t)^3 = 50 \int (120 + 2t)^3 (1 + \sin t) dt$$

$$m(120 + 2t)^3 = 2t^4 + 480t^3 + 43200t^2 + 1728000t -$$

$$\cos t (120 + 2t)^3 + 6 \sin t (120 + 2t)^2 + C$$

$$m = \frac{(2t^4 + 480t^3 + 43200t^2 + 1728000t) - \cos t + 6 \sin t + C}{(120 + 2t)^3} \quad \frac{C}{(120 + 2t)(120 + 2t)^2}$$

When $t = 0$, $m = 150$

$$150 = 50 \left(-1 + \frac{C}{(120)^3} \right)$$

$$150 = -50 + \frac{50C}{120^3}$$

$$259,200,000 = -86,400,000 + 50c$$

$$259,200,000 + 86,400,000 = 50c$$

$$345,600,000 = 50c$$

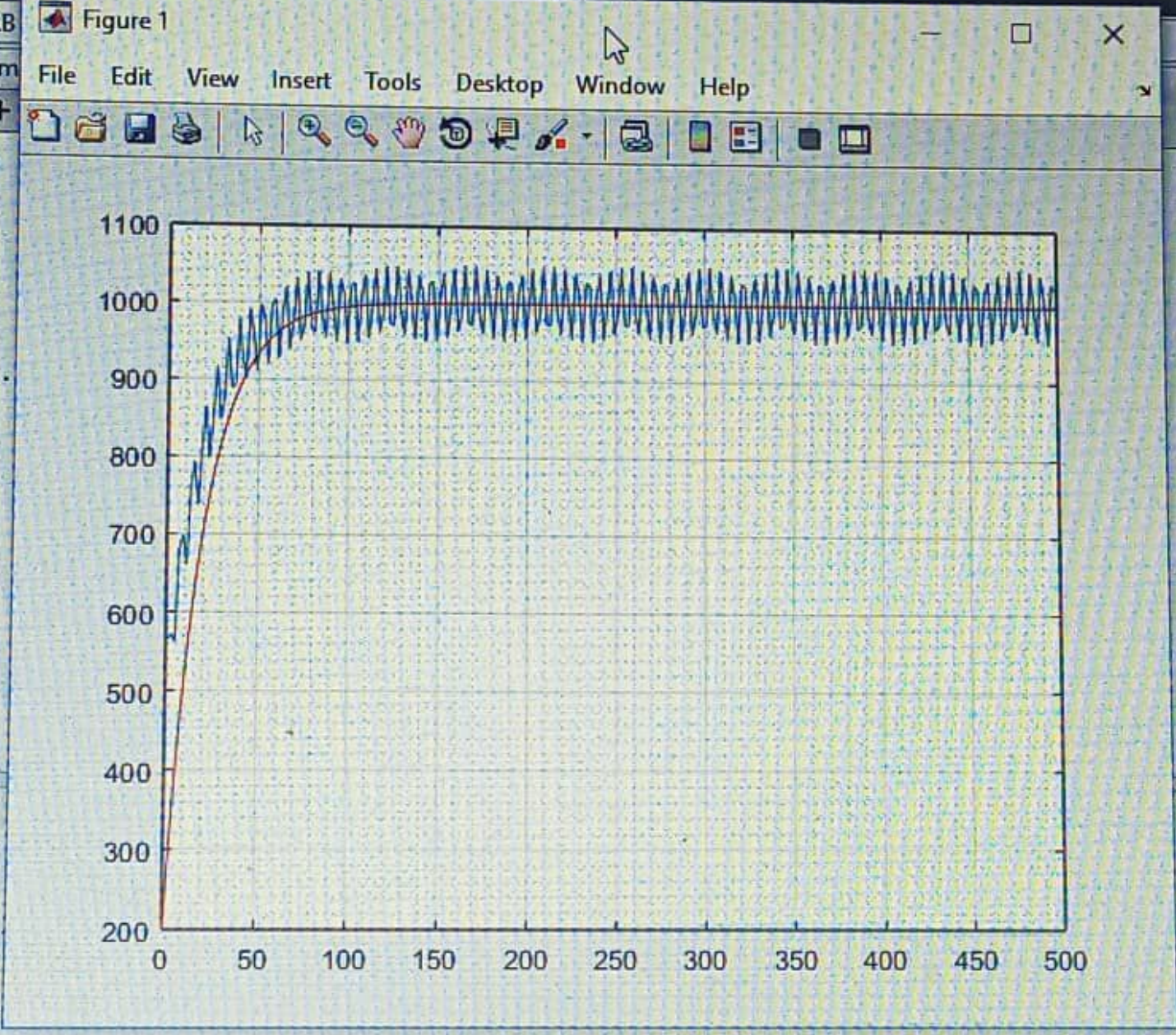
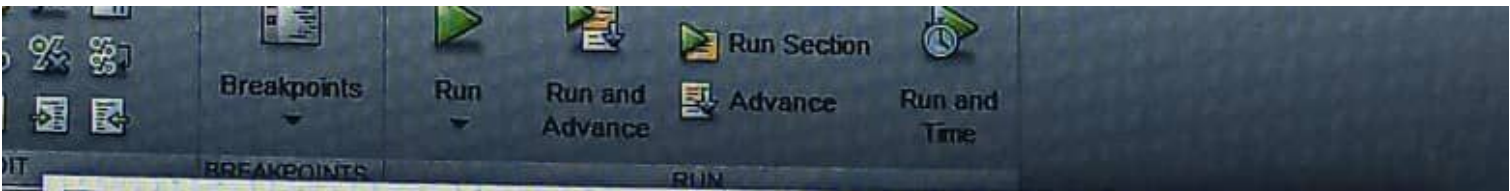
$$\therefore 50c = 345,600,000$$

$$c = \underline{345600000}$$

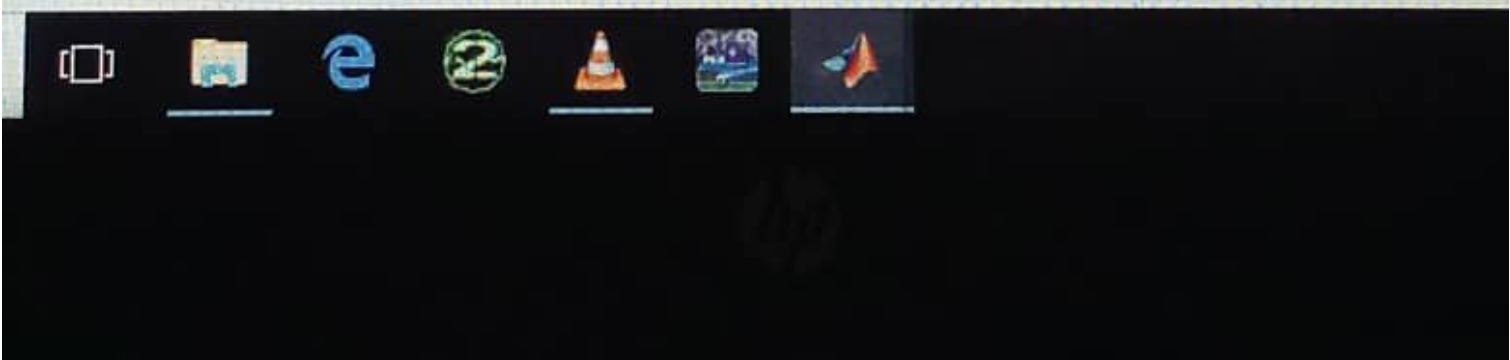
50

$$= 6,912,000$$

$$m = \left(2t^4 + 480t^3 + 43200t^2 + 172800t \right) - (0.5t + \frac{65m}{(120+2t)} + \frac{691200}{(120+2t)^3})$$



169 170 171 172 173 174 175 176 177 178 179 180 181





Find Files



Insert



New

Open

Save

Compare

Go To

Comment



Breakpoints

FILE

NAVIGATE

EDIT

BREAKPOINTS

File

C:\Users\HP\Documents\MATLAB

Editor - C:\Users\HP\Documents\MATLAB\Ekundayoassignment.m

Ekundayoassignment.m

Untitled2*

```

1 -   commandwindow
2 -   clear all
3 -   clc
4 -   syms m(t) t
5 -   eqn = diff(m,t) + 3*m(t)/(120+2*t) == (50*(1+sin(t)))
6 -   s = dsolve(eqn,m(0)==150)
7 -   y=simplify(s)
8 -   t=0:0.5:450
9 -   plot(subs(y,t))
10 -  grid on
11 -  grid minor
12 -  xlabel('Time (min)')
13 -  ylabel('Amount Of Salt(Lb)')

```

Command Window

$$\text{diff}(m(t), t) + (3*m(t))/(2*t + 120) == 50*\sin(t) + 50$$

s =

$$\text{int}(50*(\sin(x) + 1)*(x + 60)^{(3/2)}, x, 0, t, \text{'IgnoreSpecialCases'}, \text{true},$$

fx



Type here to search

