MATLAB R2018a

Editor - C:\Users\me\Documents\MATLAB\whatever.m*

atthehouse.m | whatever.m* | lastminute.m

```
commandwindow
clear
clc
clear all
syms t m
t=0:0.25:450

soln=dsolve('Dm=50 + 50*sin(t)-0.025*t','m(0)=1000','t')
pretty(soln)
fplot(soln,t)
```

Command Window

New to MATLAB? See resources for Getting Started.

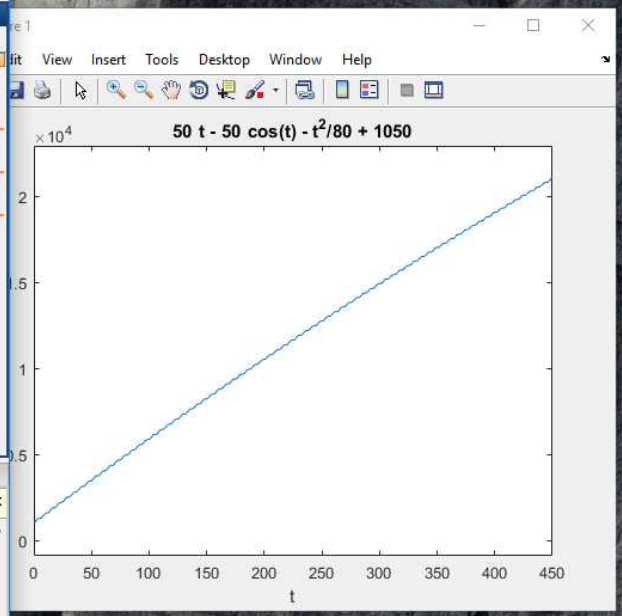
```
  450.0000


soln =

50*t - 50*cos(t) - t^2/80 + 1050

                    2
                   t
50 t - 50 cos(t) - -- + 1050
                   80
```

script Ln 10 Col 14



MATLAB R2018a

HOME | PLOTS | APPS | EDITOR | PUBLISH | VIEW

C: ▸ Users ▸ me ▸ Documents ▸ MATLAB

Editor - C:\Users\me\Documents\MATLAB\lastminute.m

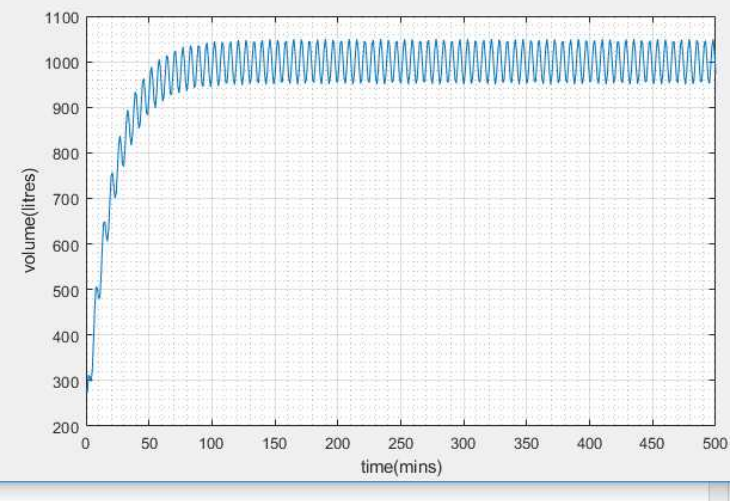
atthehouse.m | whatever.m | lastminute.m

```
commandwindow
clear
clc
clear all
syms t
values=[];
t=1:1:500;
mean=1000-((exp(-0.05*t))*800);
y= 1000+(50/1.0025)*sin(t)+(2.5/1.0025)*cos(t)- (809.49*exp(-0.05*t));

if rem(t,2)== 0
    values=[values,mean]
else
    values=[values,y]
end
excelvalues= transpose(values)
mins= transpose(t)
plot(t,values)
grid on
grid minor
xlabel('time(mins)')
ylabel('volume(litres)')
xlswrite('odevbesdata.xlsx',('t(min)'),'veriler','A1')
xlswrite('odevbesdata.xlsx',mins, 'veriler','A2')
xlswrite('odevbesdata.xlsx',('V(litre)'),'veriler','B1')
xlswrite('odevbesdata.xlsx', excelvalues, 'veriler','B2')
```

Figure 1

File Edit View Insert Tools Desktop Window Help



Command Window | Workspace

New to MATLAB? See resources for Getting Started.

```
490
491
492
493
```

script | Ln 8 | Col 32

$\int \sin t$ Using integration by parts

Let $u = e^{0.025}$, $dv = \sin t$ $du = 0.025e^{0.025}$ $v = -\cos t$

$\int u\,dv = uv - \int v\,du$

$\int \sin t\, e^{0.025} = e^{0.025}(-\cos t) - \int -\cos t\,(0.025e^{0.025t})$

$= -e^{0.025t}\cos t + 0.025 \int e^{0.025}\cos t$

$\int e^{0.025}\cos t =$

$u = e^{0.025t}$, $dv = \cos t$, $du = 0.025e^{0.025t}$, $v = \sin t$

$\int e^{0.025t}\cos t \cdot \int e^{0.025t}(\sin t) - \int \sin t\,(0.025e^{0.025t})$

$\int \sin t\, e^{0.025} - e^{0.025t} + 0.025e^{0.025t}\sin t - 0.00062\int \sin t$

$\sin t\, e^{0.025}$

Using the integral of $\int e^{0.025t}\sin t$

$I = -e^{0.025}\cos t + 0.025e^{0.025t} - 0.00062I$

$1.00062I = e^{0.025t}(0.025\sin t - \cos t) + C_1$

$I = \dfrac{e^{0.025t}}{1.00062}(0.025\sin t - \cos t) + C$

$50\int \sin t\, e^{0.025t} = 50\left[\dfrac{e^{0.025t}}{1.00062}(0.025\sin t - \cos t) + C\right]$

O SAROJAYIE OMYLA PRE
CHEMICAL ENGINEER 100L

Sign: [redacted]

GALLON of water = 200 gal
Amount of salt dissolved = 150 lb
Initial rate of brine = 50 gal
Output rate = 30 gal

$dm/dt = m_{in} - m_{out}$; $m_{in} = 50 \times (1+\sin t)$
$= 50(1+\sin t)$ lb/min

$m_{out} = \frac{30}{1200} = 0.025 = 25\%$ of m

$dm/dt = 50(1+\sin t) - 0.025m$
$dm/dt + 0.025m = 50(1+\sin t)$
Using integrating ~~by parts~~ function $(dy/dx + Py = Q)$
$P \cdot dm/dt + Pm = Q$
$P = 0.025$, $Q = 50(1+\sin t)$
$\int P dt = \int 0.025\, dt = 0.025t$; $IF = e^{\int P dt} = e^{0.025t}$
$m \cdot I.F = \int Q \cdot IF\, dt$
$m \cdot e^{0.025t} = \int 50(1+\sin t)\, e^{0.025t} dt$
$m \cdot e^{0.025t} = \int (50 + 50\sin t) \cdot e^{0.025t} dt$
$m \cdot e^{0.025t} = \frac{50e^{0.025t}}{0.025t} + \int 50 \sin t\, e^{0.025t}$

Using