

Chem. Activities: Avogadro's Equation

18 (16002/039)

Using the law of balance the equation for

input - Output = $\frac{dy}{dt} = y_{in} - y_{out}$

$(1 + \sin t) \cdot 50 \text{ gal} / \text{min}$
at $t = 1$ $(1 + \sin(1)) \approx 1.0216$

Amount of Salt = $50 \text{ gal/min} \times 1.0216 / \text{gal}$
 51 lb/min

The tank then contained 1200 gal of water

80 gal exits / min $\frac{80 \text{ gal}}{1200} = 2.5\%$

2.5% leaves per min

$y_{out} \approx 2.5\% \text{ of } y$

$\frac{dy}{dt} = 51 - 0.025y = -0.025y + 51$

$\frac{dy}{dt} = -0.025 \left(\frac{-0.025y + 51}{-0.025} + \frac{51}{-0.025} \right)$

$\frac{dy}{dt} = -0.025 (y - 2040)$

$\frac{dy}{y - 2040} = -0.025 \int dt = \ln |y - 2040|$

$\frac{y - 2040}{y} = -0.025 \int dt = \int dy = \int -0.025 dt$

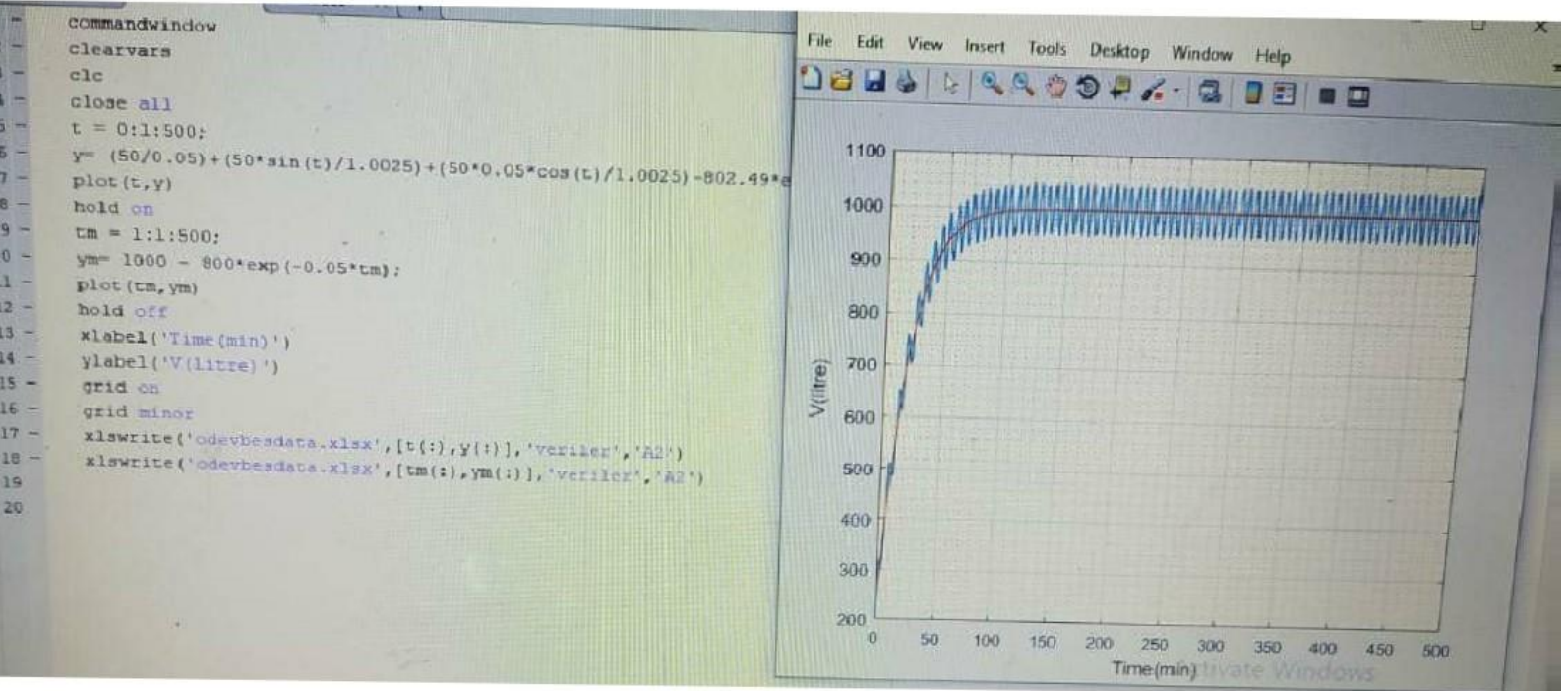
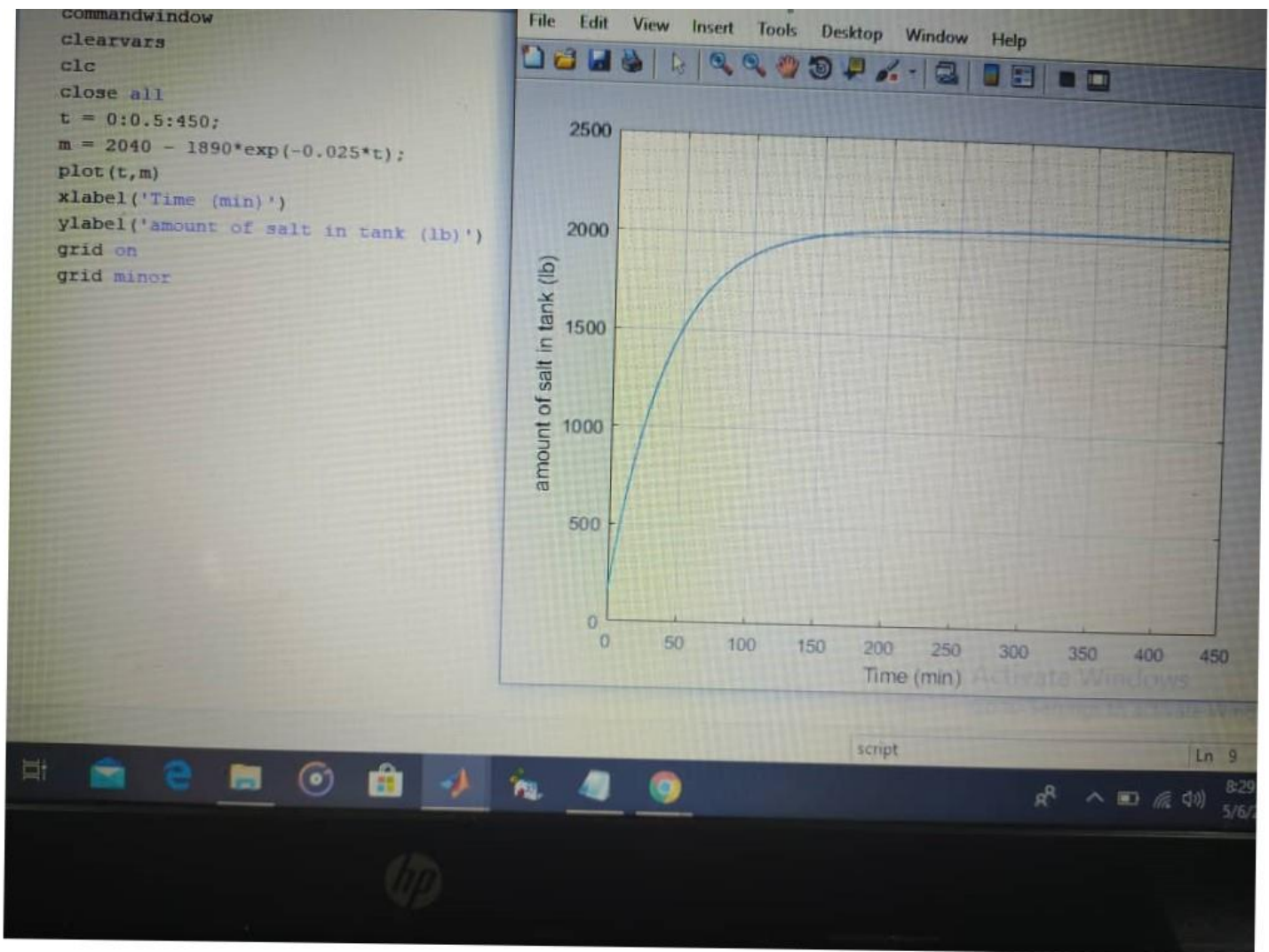
$\int \frac{dy}{(y - 2040)} = -0.025 \int dt = \ln |y - 2040|$

$\ln |y - 2040| = -0.025t + C$

$y - 2040 = e^{-0.025t + C} = e^{-0.025t} \cdot e^C$

Handwritten notes on lined paper, including the following text:

at 11 y-150
150 - 2040 - y-150
y-150 - 1890
y-1890 - 0-021
y-2040 - 1890 - 0-021



	A	B	C	D	E	F	G	H
2		1 239.0165						
3		2 276.1301						
4		3 311.4336						
5		4 345.0154						
6		5 376.9594						
7		6 407.3454						
8		7 436.2495						
9		8 463.744						
10		9 489.8975						
11		10 514.7755						
12		11 538.4402						
13		12 560.9507						
14		13 582.3634						
15		14 602.7318						
16		15 622.1068						
17		16 640.5368						
18		17 658.0681						
19		18 674.7443						
20		19 690.6072						
21		20 705.6964						
22		21 720.0498						

Sheet1 veriler

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