

Apply the Laplace transform to the differential equation.

 $\frac{dy}{dt} + 0.025y = 500(1 - \sin t)$

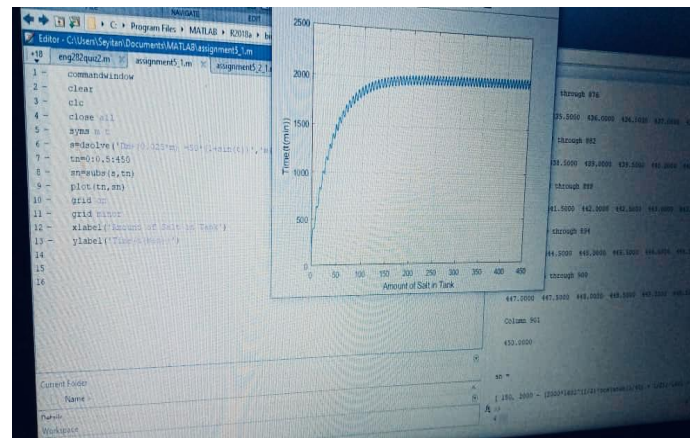
 $y(0) = 150$

 The tank contains 1000g of salt and the solution leaves the tank at a rate of 2.5% of its content.

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Consider the term $\frac{dy}{dt} + 0.025y = 500(1 - \sin t)$

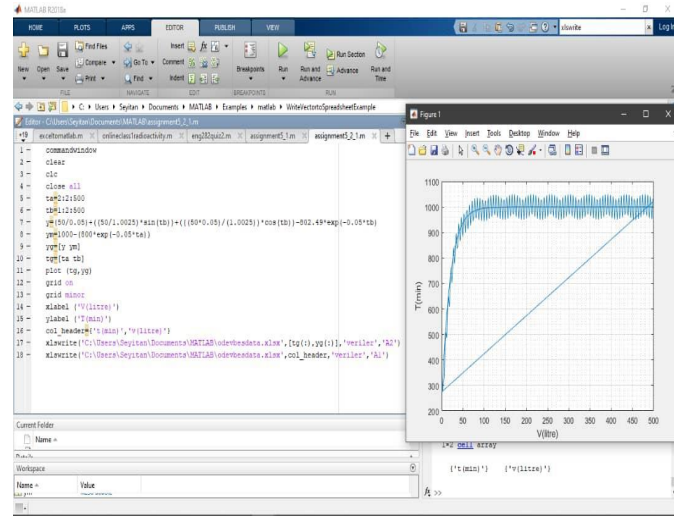
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$y = 2000 - \frac{50}{1.000625} (1 - \cos t) + 500 \sin t$

 $y = 2000 - 49.9687(1 - \cos t) + 500 \sin t$