Quiz #8

Download the file fluid_data.txt from the website before starting.

The following equation models the wave patterns of a particular liquid when it is disturbed by an external force:

$$y(x) = Fe^{-ax}\sin(bx)$$

where F is the magnitude of the external impulse force, and a and b are constants associated with the visocity and density, respectively. The following data have been collected for the following types of fluids:

Fluid	a value	b value
Ethyl Alcohol	0.246	0.806
Water	0.250	1.000
Oil	0.643	1.213

Write a script that:

1) Reads in the data found in fluid_data.txt (this is the numerical data from the above table).
2) Prompts the user for a value for *F.*
3) Creates an x-vector with values from 0 to 20 in increments of 0.1
4) Calls a function 'expdecay' that calculates y(x) for each of the three fluids.
    a. You must create function 'expdecay'. Inputs are: F, x, a, b. Output: y.
5) Plots y(x) vs x for each fluid on the same plot using the following formats:
    a. Ethyl alcohol: red * markers
    b. Water: green +markers
    c. Oil: blue circle markers
    d. Add legend
    e. Label the x-axis with 'x'
    f. Label the y-axis with 'y'
    g. Title: 'Decaying Sinusoids'
6) Put the x, and y(x) data in an array called 'output'
7) Save 'output' to a file called 'fluid_output.txt'

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