Phys234, 2018, Problem set #1: In-lab questions, Thursday Lab

Question 3:

Write a function file `ps1q3thursday.m` that contains the Matlab statements to create a **table** of $y = \sinh(\alpha x)$ for $-\pi \leq x \leq \pi$, where α is a numerical constant that takes the 5 different values $0.2, 0.4, 0.6, 0.8, 1$. (sinh is the hyperbolic sine.) Arrange the table so that the first column contains the values of x and columns 2 to 6 contain the values of y for each on the 5 different values of α (in increasing order). Each row should correspond to different values of x. To keep the table short, specify the vector x to consist of 11 equally spaced values between $-\pi$ and π. Make sure the execution of your function `ps1q3thursday.m` prints out the answer. *Hint:* The easiest way to produce a table is to generate a matrix, and print it out.

Question 4:

Write a function file `ps1q4thursday.m` that contains the Matlab statements to create a **2D plot** of $y = \sinh(\alpha x)$ for $-\pi \leq x \leq \pi$, where α is a numerical constant that takes the 5 different values $0.2, 0.4, 0.6, 0.8, 1$. (sinh is the hyperbolic sine.) Arrange the plot so that x is on the horizontal axis, y is on the vertical axis. You should get 5 different curves, each corresponding to a different value of α. Specify the vector x to consist of 100 equally spaced values between $-\pi \leq x \leq \pi$. Make sure to label your axes, and to include a legend to identify your curves (you can label each curve alpha = 0.2, alpha=0.4, etc.). Do not submit a printout (e.g. pdf, ps, etc.) of your plot, only the function m-file `ps1q4thursday.m` that creates it.