

Math 112, Introduction to Maple Lab Exercises

Directions: To complete this assignment, feel free to refer back to *Introduction to Maple Lab*, the “Help” menu in Maple or consult with your fellow classmates.

Preliminaries

- Open a *blank* Maple worksheet. (Save the blank sheet to your H drive and save frequently throughout your session. Maple can freeze up and make you exit “badly”. You don’t want to lose your work!)
- Put your name and the title “Introduction to Maple - Exercises” at the top of the sheet. (NOT by a pen or pencil but with Maple text mode!) Experiment with larger fonts and with centering the title. (It only takes a moment to make it look presentable!)
- Enter the following questions into Maple in the text mode. Following each question you will use a Maple execution group (or several) to perform the indicated tasks.

1) Have Maple find the decimal approximation of $e^{2\pi}$ to 20 decimal places.

2) Have Maple factor the polynomial $x^4 + 6x^3 - 3x^2 - 16x + 12$

3) Get Maple solve the following system of equations

$$\begin{aligned}x - y + 4z + 10w &= 3 \\2x + 2y - 10z + 5w &= -5 \\-x - y + 2z + 5w &= -2 \\3x + 5y - 4z - 10w &= 1\end{aligned}$$

4) Define the *function* f , given by $f(x) = x \sin(\frac{1}{x})$ in Maple (as a function, not an expression). Then determine the exact value and the approximate value to 20 decimal places of $f(\frac{2}{\pi})$.

5) Plot the function defined in problem 4 using a window size of x from -1 to 1 and y from -1 to 1. Make the plot color blue and give the title “My First Plot”.

6) Plot the function defined in problem 4 and its derivative in the same window.

7) Use your new Maple skills to find the local maximum and minimum values of the function $g(x) = x^3 e^{-x^2}$. Does the function have a global maximum? A global minimum? Justify your answers analytically without referring to a graph. (You may, of course, use a plot to help with the intuition). Carefully annotate your worksheet using the Text mode in Maple so that the reader can easily follow your argument.

Print out your Maple worksheet to turn in.