Math 111, Introduction to Maple Lab, Due Mon Sep 3

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. Open a blank maple sheet and enter each question into maple in text mode. Following each question use Maple's execution group to perform each calculation. Be sure to put your name and the title "Introduction to Maple Lab" at the top of the sheet. (NOT by a pen or pencil but with Maple text mode!)

1) Give the decimal approximation of $e^{2\cdot\pi}$ to 20 decimal places.

2) Find the factorization of the polynomial $x^4 + 6x^3 - 3x^2 - 16x + 12$

3) 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 decimal point approximation up to 20 places of $f(\frac{2}{\pi})$.

4) Plot the function defined in the previous problem 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".

5) A parcel delivery company will deliver a package only if the girth (distance around the package, which is 2· (side for square base+height)) does not exceed 108 inches. A package company wants to design a box with square base (x by x inches) that will have a maximal volume and will meet the delivery services restriction.

a) Determine a formula that would describe the volume of such a box as a function of x and define it in Maple as a function, named V.
b) Considering the physical limitation imposed by the company, what will be the domain of the function V? Plot the function on this domain.
c) From the graph, estimate the dimension of the box with maximal volume.
d)What is the maximal volume corresponding to the value of x found in the last part?