

APPM 2450 Calculus 3 Computer Lab
Lab Exercise 3

Create a Mathematica notebook that does all of the following. Feel free to ask your neighbor or your lab instructor for help if you get stuck. Items with a \blacktriangleright are required, items with a \star are optional.

- \blacktriangleright Define the following two functions: $f(x) = x^2 - 4 - 4$ and $g(x) = \sin^2(x) - x - 4$.
- \blacktriangleright Find a solution to $f(x) = 0$
- \blacktriangleright Find a solution to $g(x) = 0$
- \blacktriangleright Create a list plot of $f(x)$ and $g(x)$ to determine if the results from above are reasonable. Adjust the increment size as needed.
- \blacktriangleright Make a table of plots of the first four derivatives of $x^4 - 10x^2$.
- \blacktriangleright Plot your favorite 2D parametric equation using t as your parameter.
- \blacktriangleright Turn the above 2D plot into a 3D parametric plot by adding a third dimension. For example let $z = .5t$.
- \blacktriangleright Work on project 1.