MAT517 Homework 2

Due Wednesday, Feb 19

Use Geogebra to create an application that illustrates the concept of a parabolic mirror. In particular, allow the user to specify the graph of a function $y = ax^2$ for a variety of values of a (specify a by a slider). Then illustrate dynamically that parabolas have the property that, if they are made of material that reflects light, then light that travels parallel to the axis of symmetry of a parabola and strikes its concave side is reflected to its focus, regardless of where on the parabola the reflection occurs.

Thus, a parabolic shape is a appropriate for a directional microphone, a flashlight, a satellite dish, etc.

A good application should be easy to use and understand, but also look good by making appropriate use of color, line width and style, hide extraneous details, etc. It is best if the user can *discover* the result, rather than be told the result and verify it.

While it is not strictly required, think about (and describe, if you like) how you might use this in a classroom lesson, assignment, or discussion.