Impemented Features:

- Linear gradient shader
- Radial gradient shader
- spirographs
- L-systems
- Water shader

Linear Gradient Shader:

I had a lot of trouble visualizing how to make this work, but with your help in office hours I was able to get it. The linear shader is found in most fragment shaders. It can be specifically viewed in "scene3.fragment.glsl" at lines 24-35.

Radial Gradient Shader:

This got tacked on because you said I should start with this and then go to linear. You can find it in "scene3.fragment.glsl" at lines 27-44.

Spirographs:

These were the easiest to code, actually. I used the Wikipedia article for Spirographs as a reference for the formula, and then offset a "square" of pixels by the units that formula spit out. Difficulties came in figuring out the period of a spirograph, which I wasn't able to do. Some spirographs draw over themselves because of this. Found in "Spirograph.java".

L-Systems:

I'm not entirely sure if how I coded this L-System counts for the full 4 points you were looking for. I'm hoping for at least two, because that's what I need to get 8 points. I ended up implementing a type of Cantor Set called "Cantor Dust," which can be found in the "CantorSet.java" file. A big problem I ran across with the cantor set was the winding order of the vertices of the squares. If they weren't specified in a certain pattern, the set would break and draw random squares elsewhere. Coloring the set was also difficult, but in the end I decided to rely on the recursive integer that controlled its growth. This means the colors are hardcoded, but with a little more code wrangling they could be customized.

I'd also like to thank Taylor for linking me to this website (http://natureofcode.com/book/chapter-8-fractals/), which helped me understand how to code L-Systems better.

Water shader:

I mostly got this working with the exception of altering the x-coordinate by the y-coordinate. It was very simple; the most difficult part was finding a period that went decently with the music. It's found in "scene7.vertex.glsl".