Weekly 2 (Due Friday 7/12 at 11:59PM)

Overview: This assignment is worth **68 points**. Each question has multiple parts and eacb part is worth **4 points**. The grader determines your score for each part of each problem using the Weekly Assignment Rubric. Specifically, the grader will be looking for evidence of conceptual understanding, correct mathematical reasoning, and excellent written-communication.

Guidelines: You are required to adhere to the Weekly assignment guidelines and the assignment submission guidelines, both of which can be found on Page 3 of the syllabus. If you fail to follow the guidelines, you risk receiving no credit for you work. Turn in your assignment via gradescope.

Directions: Complete the following exercises from the Active Calculus textbook. You can click the links below to go directly to the exercise.

1. (20 points) Exercise 9.5.11. Here's a visualization: GeoGebra: Exercise 9.5.11
2. (24 points) Exercise 9.5.12. It will help to draw a picture.[1]
3. (8 points) Let p denote the plane with scalar equation $2x + 2y + z = 1$. Let $P = (0, 0, 1)$ and $Q = (2, -1, 1)$. A vector normal to p is $\mathbf{n} = (2, 2, 1)$.
   (a) Show that P lies in the plane p, but Q does not.
   (b) Compute $|\text{comp}_{\mathbf{n}}(\overleftarrow{PQ})|$ and explain why this is the shortest distance from Q to the plane p.

   Here's the relevant visualization: GeoGebra: Distance from a Point to a Plane.
4. (16 points) Exercise 9.7.15. For part (d), you are asked to graph something in 3D. Use the GeoGebra 3D Calculator to do it.[2] You do not need to include the graph in your write-up (unless you want to).

[1] Once you have drawn the picture for yourself, you can see this visualization of the situation: GeoGebra: Exercise 9.5.12

[2] In case you haven't noticed: I think GeoGebra is awesome for visualizing calculus.