The following Exam Review is for my Physics with General Calculus I course for the Fall of 2025, which was taken during my gap year at Palm Beach State College under Professor Leo Bae.

The content covered in the final exam will be a culmination of quiz problems from the following chapters:

- Unit 1: Chapters 1, 2, 3, and 4
- Unit 2: Chapters 5, 6, and 13
- Unit 3: Chapters 7, 8, and 9

Chapter 1 Quiz Problems

Problem 1 - Milky Way Galaxy Distance. The disk of the Milky Way galaxy is about 1.0×10^5 light-years (ly) in diameter. The distance from the center of the Milky Way to the center of the Andromeda galaxy is about 2.0 million ly.

(a) Imagine a scale model where the two galaxies are represented by circular plates. If the plate representing the Milky Way has a diameter of 16 cm, what would be the distance between the centers of the two plates in meters?

$$\frac{1.0 \times 10^5 ly}{2.0 \times 10^6 ly} = \frac{diameter\,in\,cm}{x}$$

From here, solve for x and take cm $\rightarrow$ m

(b) What if? The Milky Way and Andromeda galaxies are members of the Local Group, a cluster of more than 50 galaxies spread across a spherical volume with a diameter of 10 million light years. Imagine you could create a scale model of the Local Group with the Milky Way and represented as circular plates with diameters of 16 cm. What would be the diameter (in m) of your spherical scale model of the Local Group?

$$\frac{1.0 \times 10^5 ly}{1.0 \times 10^7 ly} = \frac{diameter\,in\,cm}{x}$$