Name_____

Physics 111 Quiz #1, September 16, 2022

Please show all work, thoughts and/or reasoning in order to receive partial credit. The quiz is worth 10 points total.

I affirm that I have carried out my academic endeavors with full academic honesty.

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1. Two point-charges $q_1 = 3nC$ and $q_2 = unknown$ are placed along the x-axis. Point charge $q_1$is placed at a point $(x, y) = (-4,0)$ while point charge q_2 is placed at $(x, y) = (7,0)$, where the distances are measured in centimeters. With the two point-charges in this configuration, the net electric field at the origin $(x, y) = (0,0)$ is known to be zero. What are the magnitude and sign of the point charge q_2 that makes this possible?

2. Suppose that point-charge q_2 is moved to a point $(x, y) = (2,0)$ along the x-axis, where the distances are still measured in centimeters. What, is the electric field at the origin in this case?

3. A $q_3 = -2nC$ point-charge is placed at the origin with the point charges configured as in part 2. What is the magnitude and direction of the electric force felt by q_3?

4. Suppose that you have the situation shown below. Each point-charge has the same magnitude of charge, q, and the sign of each point-charge is shown in the figure. What is the net electric force on the point charge located at the origin?