

**Instructions:** We encourage you to work with others in a small group on this project. You should write your solution neatly using complete sentences that incorporate all symbolic mathematical expressions into the grammatical structure. Include enough detail to allow a fellow student to reconstruct your work, but you need not show every algebraic or arithmetic step. It is important that you do your own writing, even if you have worked out the details with other people. All graphs should be done carefully on graph paper or drawn by a computer. This project is due in class on Monday, March 7.

---

Four equal positive point charges are fixed at the corners of a square in a plane. A test particle of positive charge is released from rest in that plane. Find the largest region of the plane for which you can guarantee the test particle will remain if it is released within that region.

Your results should include a precise description of your region and an argument justifying the claim that your region has the required property (i.e., any test particle of positive charge released from rest in the region will remain in that region). You can also include conjectures about larger regions that you think might have the right property but for which you cannot provide a complete justification. Give any partial justification or evidence for these conjectures.