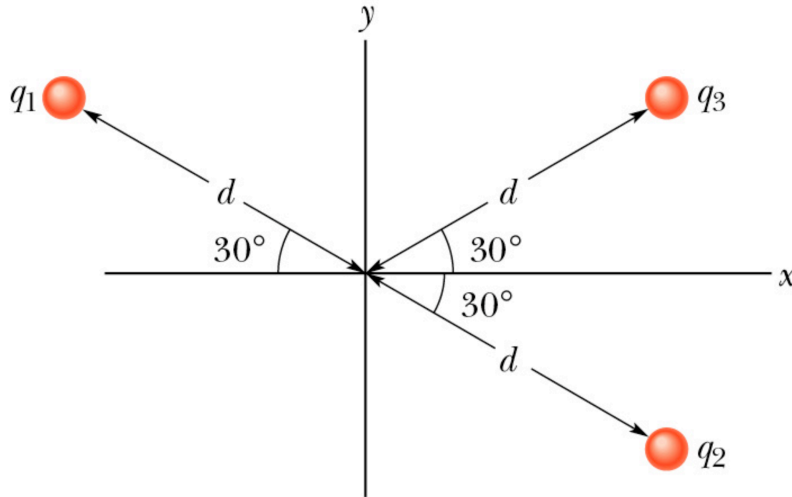**Physics 2102   Section 6   Christian Buth**

Activity 3, January 21, 2008

The figure shows three particles with charges q_1 = +2Q, q_2 = -2Q, and q_3 = -4Q, each at a distance d from the origin. The point of this activity is to find the direction of the electric field at the origin.

First, let us consider the electric field from each charge in turn.

Write down the magnitude of E_1 (electric field created by charge q_1), and draw vector E_1 in the figure. (Where should the vector start from? In which direction does it point?)

Do the same for electric fields E_2 and E_3.

Now we want to start adding electric fields. Are there any symmetries that are going to help us? (answer is yes…) Which two electric fields should we add together first? (no further calculations needed).

Now you should be able to see another symmetry that will help you. Do you see that one of the x- and y-components of the total electric field will be zero. Which one?