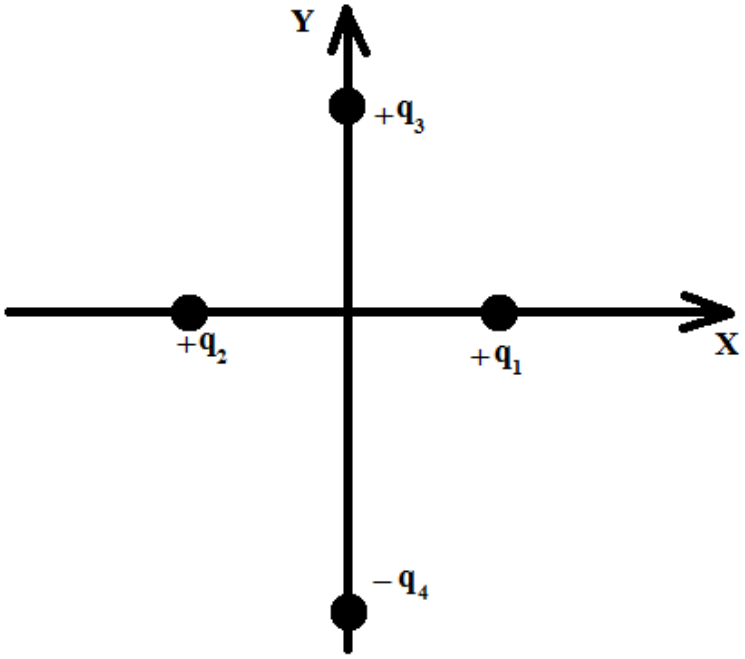
Two charges are located on the x axis: q1= +6.0 microcoulumbs at x1=+4.0cm, and q2=+6.0 microcoulumbs at x2= -4.0cm. Two other charges are located on the y axis: q3=+3.0 microcoulumbs at y3=+5.0cm, and q4= -8.0 microcoulumbs at y4= +7.0 cm. Find the net electric field (magnitude and direction) at the origin.



From the task we can see, that the charges of the points 1 and 2 is equal and situated symmetrically relative to Y-axis. It means that at the origin the net field of this 2 charges (1 and 2) is equal to 0. So we will sum fields only from point 3 and 4:

$$E = k\frac{q_3}{y_3^2} + k\frac{q_4}{y_4^2}$$

$$E = 9 * 10^9 Nm^2/C^2 \left(\frac{3 * 10^{-6}C}{(5 * 10^{-2}m)^2} + \frac{-8 * 10^{-6}C}{(7 * 10^{-2}m)^2}\right) = -3.6 * 10^6 V/m$$

Answer: So, electric field magnitude is equal to $|E| = 3.6 * 10^6 V/m$, and direct against to the Y-axis