[gex66] Electrostatic field of three point charges

Consider three point charges $q_1 = 1\text{nC}$, $q_2 = 2\text{nC}$, and $q_3 = 3\text{nC}$ positioned at $\mathbf{x}_1 = 1\,\hat{\mathbf{i}}\,\text{cm}$, $\mathbf{x}_2 = 2\,\hat{\mathbf{j}}\,\text{cm}$, and $\mathbf{x}_3 = 3\,\hat{\mathbf{k}}\,\text{cm}$, respectively.
(a) Find the electric field at position $\mathbf{x} = \mathbf{0}$ and express it in the form $\mathbf{E} = (E_x\,\hat{\mathbf{i}} + E_y\,\hat{\mathbf{j}} + E_z\,\hat{\mathbf{k}})\text{N/C}$ with explicit numerical values of the three components in SI units.
(b) Find the position $\mathbf{x}'$ between the three charges at which the electrostatic field vanishes.
Hint: For part (b) Use the NSolve command and identify the sole physically meaningful solution.

Solution: