

20. The net electric potential at point P is the sum of those due to the six charges:

$$\begin{aligned} V_P &= \sum_{i=1}^6 V_{Pi} = \sum_{i=1}^6 \frac{q_i}{4\pi\epsilon_0 r_i} \\ &= \frac{1}{4\pi\epsilon_0} \left[\frac{5.0q}{\sqrt{d^2 + (d/2)^2}} + \frac{-2.0q}{d/2} + \frac{-3.0q}{\sqrt{d^2 + (d/2)^2}} \right. \\ &\quad \left. + \frac{3.0q}{\sqrt{d^2 + (d/2)^2}} + \frac{-2.0q}{d/2} + \frac{-5.0q}{\sqrt{d^2 + (d/2)^2}} \right] \\ &= \frac{-0.94q}{4\pi\epsilon_0 d} . \end{aligned}$$