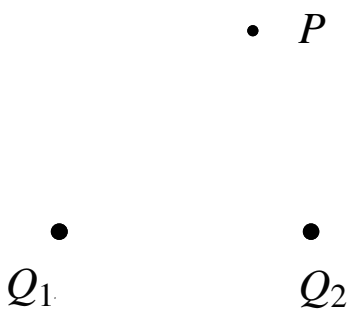
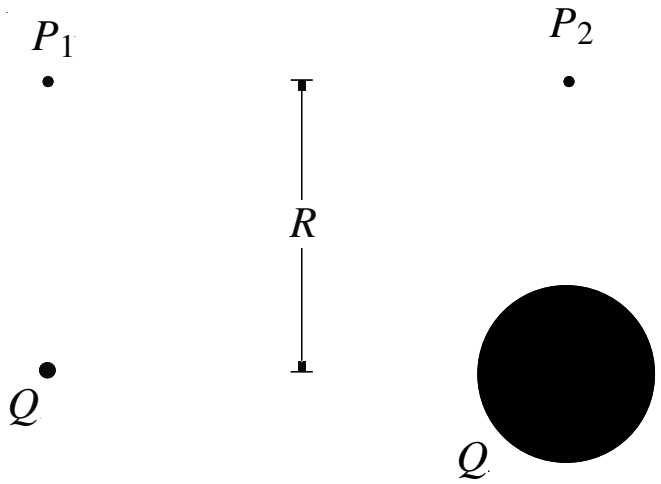
Consider the system of two charges shown below. To find the electric field at point *P*, we must take the vector sum of the electric fields of the individual charges at point *P*. The electrostatic potential, however, is a scalar. Can we simply take the algebraic sum of the potentials of the individual charges at point *P* to find the potential of the system at point *P*?



1. Yes.
2. No.
3. It depends.

Consider a point P_1 a distance R away from a point charge Q and a point P_2, a distance R away from the center of an insulating sphere of radius $r < R$ carrying a total charge of Q which is uniformly distributed on its surface. If we choose $V(\infty) = 0$ for both systems, which of the two points is at the higher potential?



1. P_1.
2. P_2.
3. Both are at the same potential.
4. The answer can only be determined by integrating over the surface charge.