

Answer on Question #46297 – Physics – Other

Question: the electric field around an isolated positive charge

- a) points outwards;
- b) forms clockwise circle around the charge;
- c) points inward;
- d) forms counterclockwise circle around the charge.

Solution: the direction of the electric field is always directed in the direction that a positive test charge would be pushed if placed in the space around the source charge. In our case the source charge is positive and we know that two charge that have the same sign are repulsing according to the Coulomb's law

$$\mathbf{F} = \frac{1}{4\pi\epsilon_0} \cdot \frac{q_1 q_2}{r^3} \cdot \mathbf{r},$$

where q_1, q_2 are the values of charges, \mathbf{r} is the radius vector between them. Therefore, the force that acts of the positive test charge points away from the source charge, thus the electric field around the positive source charge points outwards.

Answer:

- a) points outwards.