

Answer on Question #46024, Physics, Electromagnetism

From Gauss' law which of the following is NOT correct?

1. The outward flux of electric field through an enclosed surface is proportional to the electric charges enclosed
2. The field at a point outside a spherically symmetric charge is the same as the electric field at the same point due to a point charge at its centre.
3. The electric flux through a Gaussian surface is a vector product of the electric field and a unit vector perpendicular to and outward from the surface
4. The total electric flux through a cylinder placed in an electric field with its axis parallel to the field is zero

The net electric flux through any closed surface is proportional to the net electric charge enclosed within that closed surface.

Thus, we can find that answers 1, 2 and 4 are true

1 – definition of a Gauss' law

2 – calculation shows that electrical field distribution of a charged shell will be equivalent to the electrical field distribution of a point charge in a center

4 – if cylinder is uncharged, the total electric flux through its surface will be 0

So, the third statement is wrong – there are no vector product in the Gauss' law definition.

Answer:

3 -The electric flux through a Gaussian surface is a vector product of the electric field and a unit vector perpendicular to and outward from the surface **is NOT correct**