

Solutions

Each answer shows the steps, then the **result**.

2.1

- the net electric flux through a closed surface equals the enclosed charge divided by ε_0

2.2

- zero

2.3

- $\Phi_E = \frac{Q_{\text{enc}}}{\varepsilon_0} = \frac{5.0 \times 10^{-9}}{8.85 \times 10^{-12}} = 565 \text{ N m}^2 \text{ C}^{-1}$

3.1 B

3.2 B

3.3

(a)

- $\Phi_E = \frac{Q}{\varepsilon_0} = \frac{8.0 \times 10^{-9}}{8.85 \times 10^{-12}} = 904 \text{ N m}^2 \text{ C}^{-1}$

(b)

- $E = \frac{kq}{r^2} = \frac{8.99 \times 10^9 \times 8.0 \times 10^{-9}}{(0.20)^2} = 1.8 \times 10^3 \text{ N C}^{-1}$