

Badji- Mokhtar University -ANNABA Faculty of technology Computer science department & Electronics Department 1st year Computer sciences& automatics (2023-2024) Online courses Coursework Exercise 3 of Physics 2 Gauss's theorem



Exercise 1:

Using Gauss' theorem, determine the electrostatic field E and the potential V created by a straight wire of infinite length charged with a positive constant linear density λ .

λ	

Exercise 2:

- 1) Calculate the electric field E created at a point M located outside an infinite plane (P) of density uniform σ ($\sigma > 0$).
- 2) Deduce the field E' created in M by an infinite plane (P') perpendicular to (P) of density uniform 2σ
- 3) Calculate the resulting field E at this point.



Exercise 3:

A sphere with center O and radius R is uniformly charged throughout its volume with a constant and positive volume density ρ

- 1) Using Gauss' theorem, calculate the electrostatic field at a point M located at inside and outside the sphere
- 2) Deduce the potential V(r) knowing that V(r)=0 when r tends to infinity

