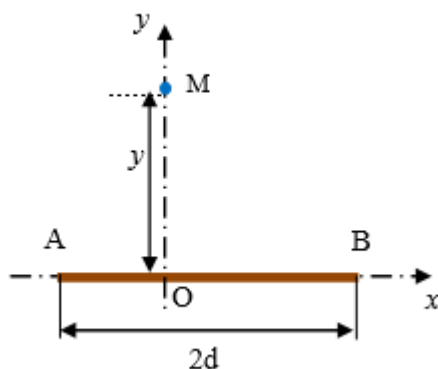


Exercise 1:

Let us considerate a wire AB of length $2d$ charged with a constant linear density $\lambda > 0$

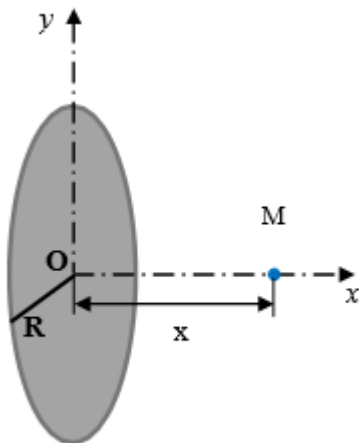
- 1) Calculate the electric field $\vec{E}$ and the potential V created on a point M located at a distance y of the wire
- 2) Deduce $\vec{E}$ and V when M is located in the mediating plane of the wire AB
- 3) Deduce $\vec{E}$ when the wire AB is of infinite length



Exercise 2:

A disk with center O and radius R carrying a constant and positive surface charge σ

- 1) Calculate the electric field and potential created at a point M of its axis OX, located at a distance x from the disk
- 2) What will the electric field $\vec{E}$ be when the radius of the disk R tends towards infinity?



Exercise 3:

Consider an electric dipole having a dipole moment $\vec{P}$ and a is the distance between its two charges $-q$ and $+q$

- 1) Calculate the electric potential and field produced by the dipole at point as a function of p , θ and r , knowing that $a \ll r$.
- 2) Find the equation of equipotential surface

