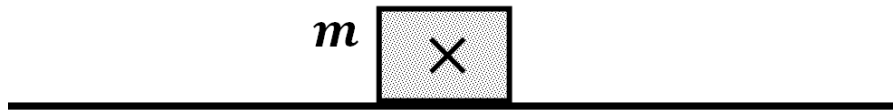


Exercise 01

An object with a mass (m) is moving along a straight line and subjected to a force $F = F_0 \cdot e^{-kt}$.
At $t = 0$, P is located at $x_0 = 0$ and has an initial velocity $V_0 = 0$.

- 1- Represent the forces acting on the moving object.
- 2- Find the velocity and position of the body at time t .



Exercise 02

The particle slides from the top of a sphere with radius R . It has a mass (m), and the motion occurs with a friction coefficient (μ). (See the figure).

- 3- Represent the forces acting on the moving particle.
- 4- Write down the differential equations that describe the motion of the body during its slide?
(Projection on the polar coordinates axes).
- 5- To determine the velocity at which the particle leaves the surface of the sphere, disregarding friction and initial velocity ($\mu = 0$ and $V_0 = 0$)?

