



Lessons questions

Write the right answer:

- I. What is the nature of the physical quantity X if $[X] = ML^2 T^2$
- a. Work b. Force c. Power
- II. If f is a scalar function and \vec{A} , \vec{B} and \vec{C} are arbitrary vectors S surface between 2 vectors, V volume between 3 vectors
1. $\overrightarrow{\text{grad}} f =$ a. $\vec{\nabla} f$ b. $\vec{\nabla} X f$ c. $\vec{\nabla} \cdot f$
2. $\text{div } \vec{A}$ a. $\vec{\nabla} \cdot \vec{A}$ b. $\vec{\nabla} X \vec{A}$ c. $\vec{A} \cdot \vec{\nabla}$
3. $S =$ a. $\vec{A} X \vec{B}$ b. $|\vec{A} X \vec{B}|$ c. $\vec{A} \cdot \vec{B}$
- 4 $V =$ a. $\vec{A} \cdot (\vec{B} X \vec{C})$ b. $\vec{A} X \vec{B} X \vec{C}$ c. $\vec{A} \cdot \vec{B} \cdot \vec{C}$

III. The work is:

$w = \Delta K$

$w = -\Delta K$

$w = -\Delta E_p$

Exercise 1

The kinetic energy of an object of mass, m moving with a velocity of 5 ms^{-1} is 25 J.

- What will be its kinetic energy when its velocity is doubled?
- Calculate the work for $V_i = 5 \text{ (m.s)}$ and $V_f = 2V_i$

Exercise 2

The rectilinear motion of a material point is defined by the following equation

$$S = 2t^3 - 9t^2 + 12t + 1$$

- Calculate the velocity and the acceleration.
- Study the motion of the point as $t \in [0, +\infty[$, by indicating the direction of motion and whether it is accelerating or decelerating