

1

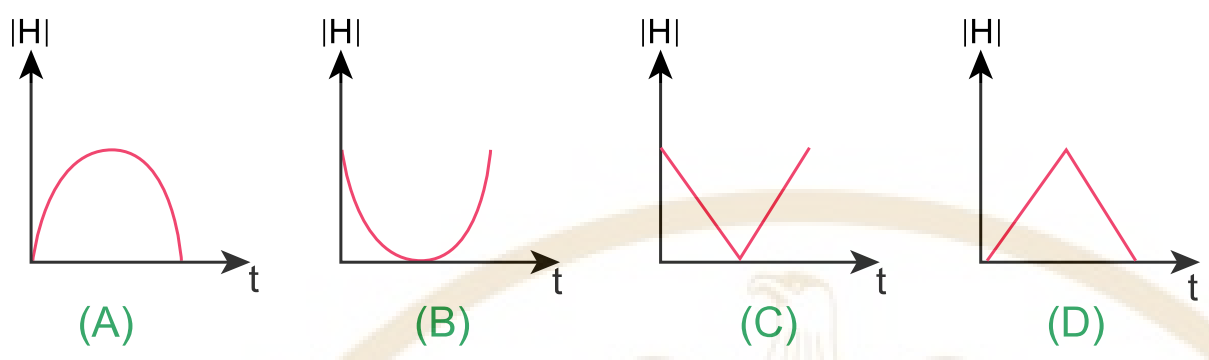
A particle moves in a straight line where its position vector $\vec{X}$ (meter) is given as a function in the time t (sec.)

by the relation $\vec{X} = \cos t \vec{C}$ where $\vec{C}$ is a unit vector in the direction of motion of the body.

Then the body passes through the origin point for the first time after time.....sec

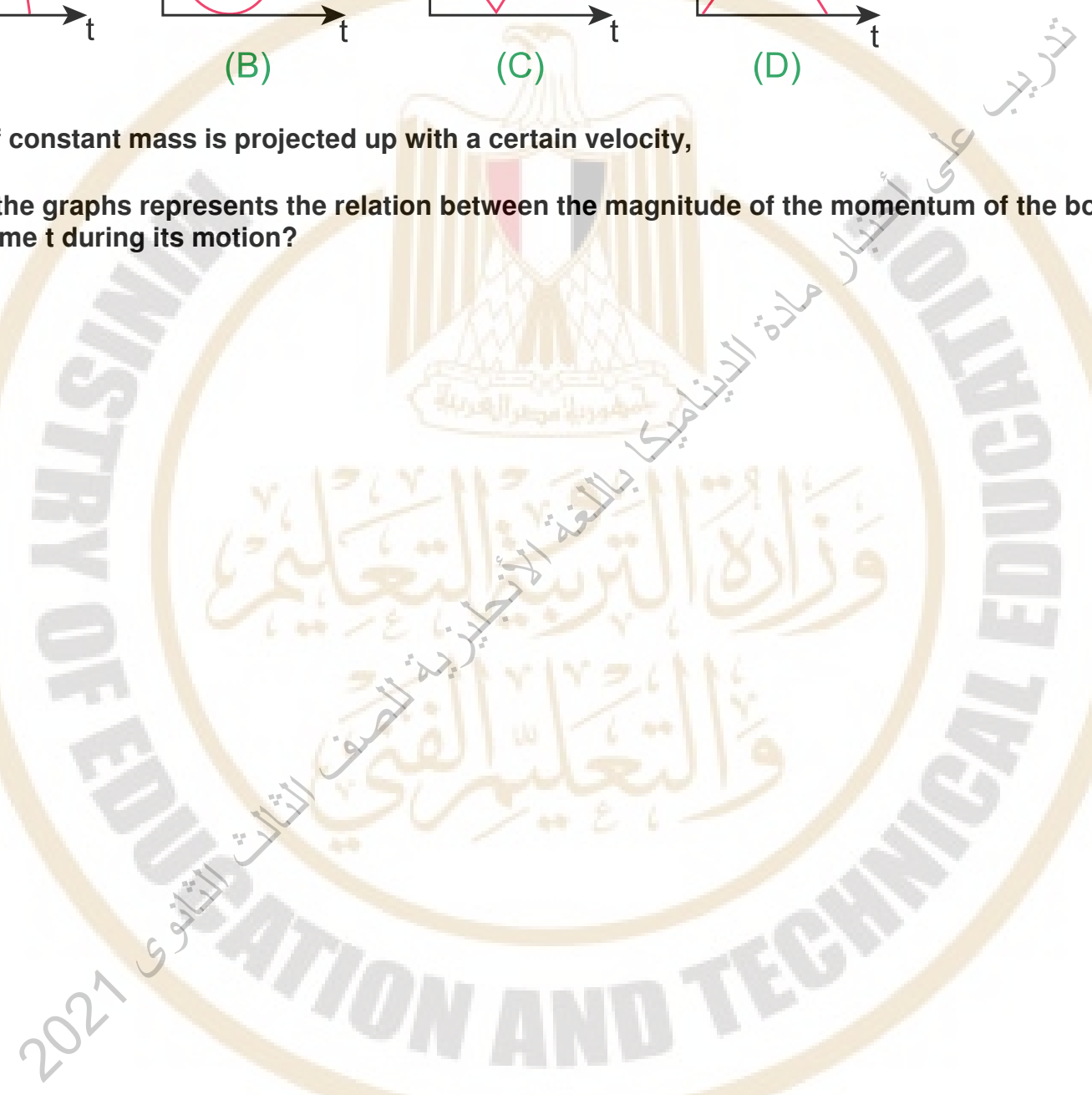
- $\frac{\pi}{2}$
- 1
- $\frac{1}{2}$
- π

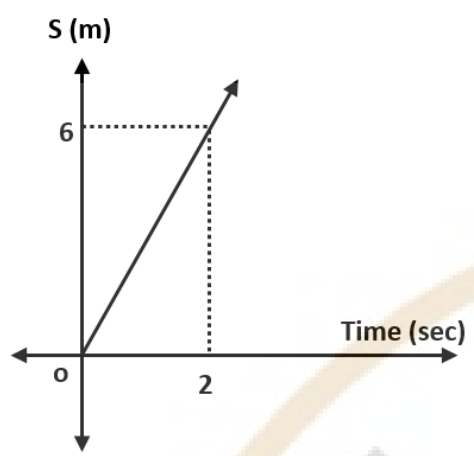




A body of constant mass is projected up with a certain velocity,
which of the graphs represents the relation between the magnitude of the momentum of the body $|H|$ and the time t during its motion?

- C
- A
- B
- D





The opposite figure **represents** the (displacement-time) graph for a body of mass 3 kg moving in a straight line , then the change in the momentum of the body during the time interval [1,3] equals Newton. sec

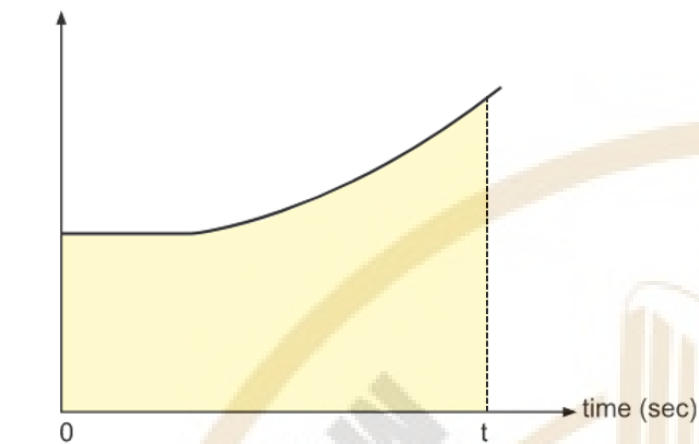
- 0
- 3
- 6
- 9

A particle moves in a straight line, its momentum changes by the rate $2t \text{ kg. m/sec}^2$ where t is time in seconds, then the magnitude of the impulse of the force acting on this particle during the tenth second = Newton. Sec

- 19
- 17
- 20
- 21



The opposite figure represents the (acceleration-time)
a (m/sec²)



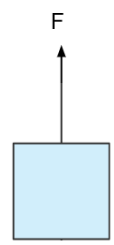
graph of a body of mass 2kg moving in a straight line, then the impulse of this force during the interval [0, t] seconds =

- Twice the area of the shaded part
- Three times the area of the shaded part
- The area of the shaded part
- Half the area of the shaded part

A force $\vec{F}$ of magnitude 7.5 kg.wt acts upon a body and moves it in a straight line, if the velocity of the body at a certain moment is 36 km/h, then the power resulted from the force at this moment CAN NOT EQUAL

- 80 kg.wt.meter / sec
- 735 watt.
- 50 kg.wt.meter/sec
- 700 watt.





A body of mass m kg is moving vertically downward with acceleration 1 m/sec^2 under the action of a force acting vertically upward of magnitude 10 kg.wt , and against resistance of magnitude 10 N , then $m = \dots\dots\dots \text{kg}$

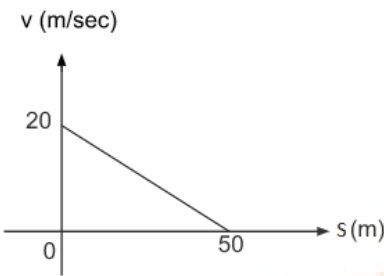
- $\frac{135}{11}$
- $\frac{220}{27}$
- $\frac{245}{22}$
- 10



A particle moves in a straight line such that its velocity (V) is given by the relation: $V^2 + x^2 = 25$, where X is the position of the particle, a is the acceleration, then.....

- $v^2 + a^2 = 25$
- $a^2 + x^2 = 25$
- $v^2 + a^2 = 0$
- $a^2 + x^2 = 0$





The opposite figure represents the (velocity - displacement) graph for a body moves in a straight line, then its acceleration (a) when the displacement vanishes =m/sec²

- - 8
- 8
- - 20
- 20



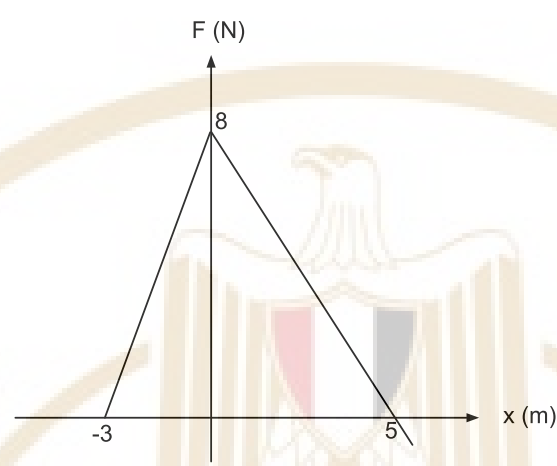


When a body of constant mass fell down from a certain height on a horizontal ground, then the impulsive force generated at the moment of contact $F \propto \dots\dots\dots$ (t is the contact time).

- $\frac{1}{t}$
- t
- t^2
- $\frac{1}{t^2}$



The opposite figure represents the (force-position) graph of a body moves in a straight line starting



from the position $x = -3$, then the position of the particle (x) when the work done by the force = - 148 joule is $x = \dots\dots\dots\text{m}$

- 20
- 13
- 17
- 10

A body at rest of constant mass, a force is acting on it to move it in a straight line with a constant acceleration (a), then the power of this force during time (t) is proportional with.....

- t
- $\sqrt{t}$
- $t\sqrt{t}$
- t^2



A particle moves in a straight line where its velocity (V) is given as a function in position (X) by the relation $v^2 = \ln x$ where $x > 1$, if (a) is the acceleration of the motion, then.....

- $2ax = 1$
- $ax^2 = 1$
- $ax = 2$
- $ax^2 = 2$

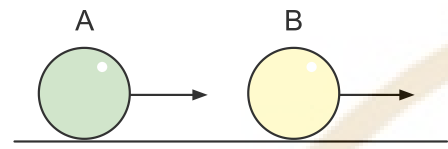
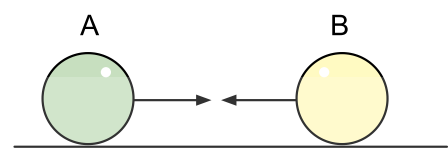




A , B are two smooth balls and the mass of each is m kg, the ball A is moving in a straight line on a smooth horizontal plane with velocity 8 m/sec, if the ball A collided with the rested ball B with an elastic collision, then the velocity of the ball A after collision directly =.....

- Zero
- 8 m/sec in the opposite direction
- 4 m/sec in the opposite direction
- 4 m/sec in the same direction





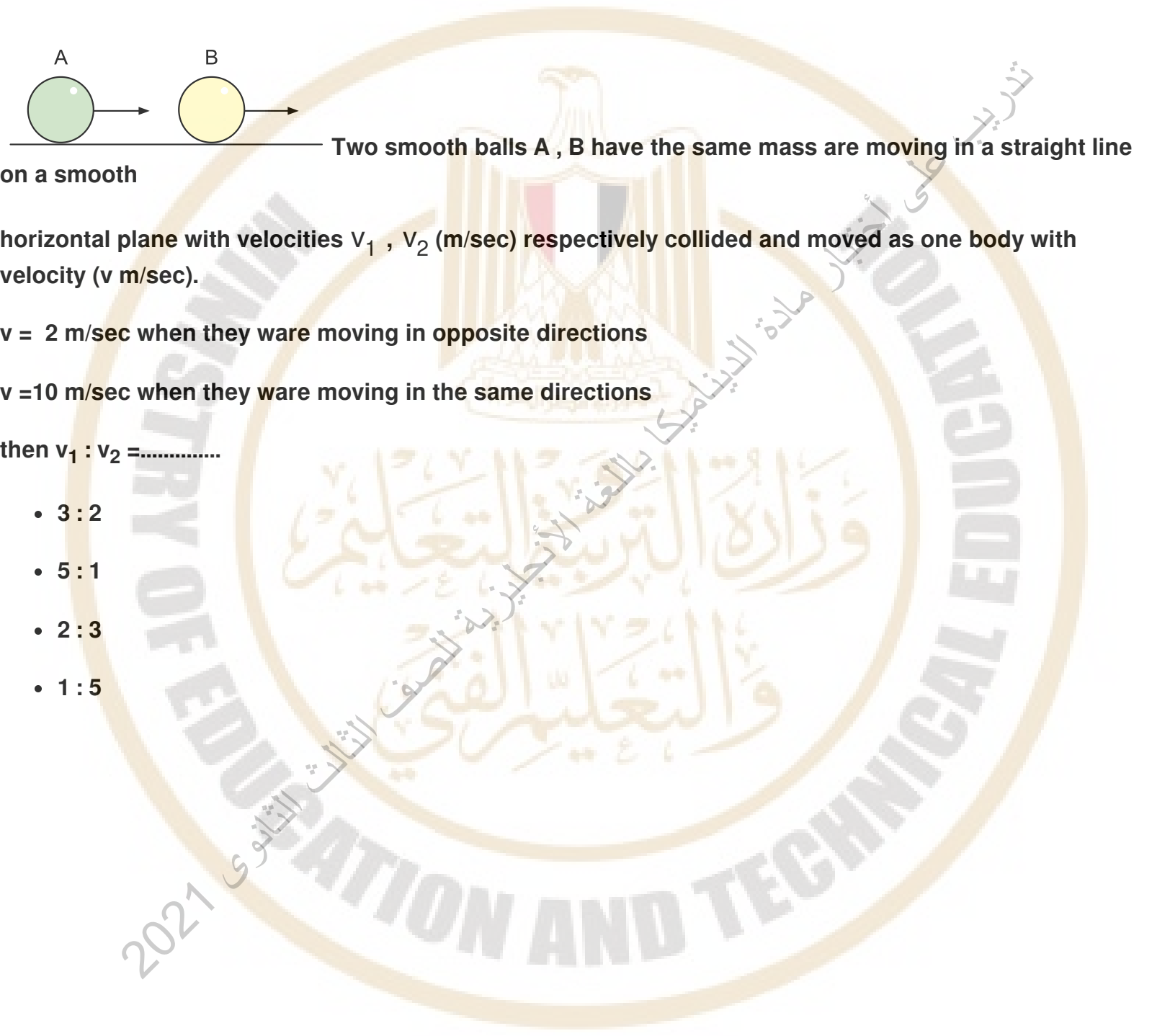
Two smooth balls A , B have the same mass are moving in a straight line on a smooth horizontal plane with velocities v_1 , v_2 (m/sec) respectively collided and moved as one body with velocity (v m/sec).

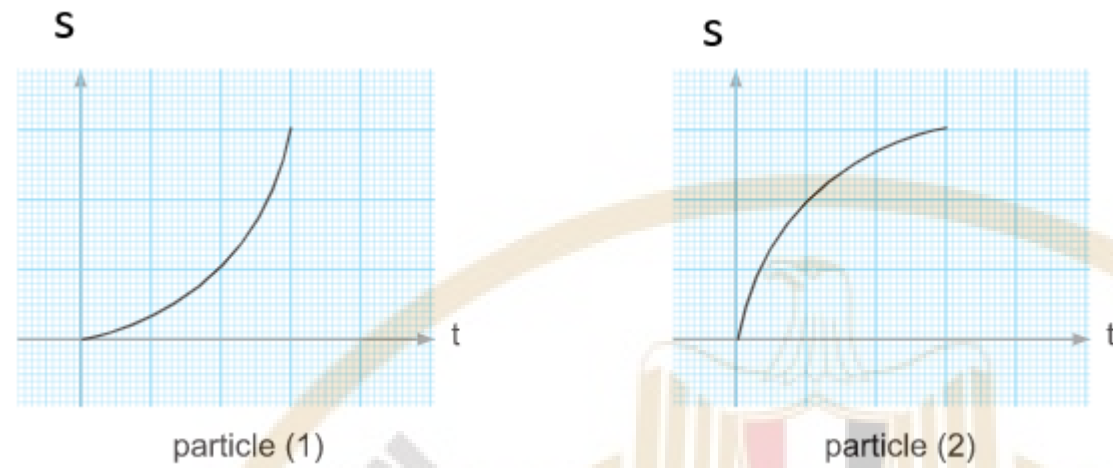
$v = 2$ m/sec when they were moving in opposite directions

$v = 10$ m/sec when they were moving in the same directions

then $v_1 : v_2 = \dots\dots\dots$

- 3 : 2
- 5 : 1
- 2 : 3
- 1 : 5

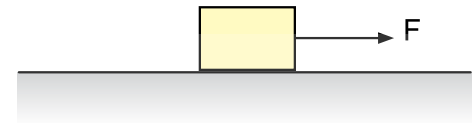




The figure represents the (displacement - time) graph of two particles moving in a straight line, which of the following statement is not correct?

- particle (2) the algebraic measure of its velocity is negative
- particle (1) the algebraic measure of its velocity is positive
- particle (2) moves with retarded motion
- particle (1) moves with accelerated motion

A body of mass m is placed on a rough horizontal plane and the coefficient



of kinetic friction between the body and the plane is 0.2, a horizontal force acting on it

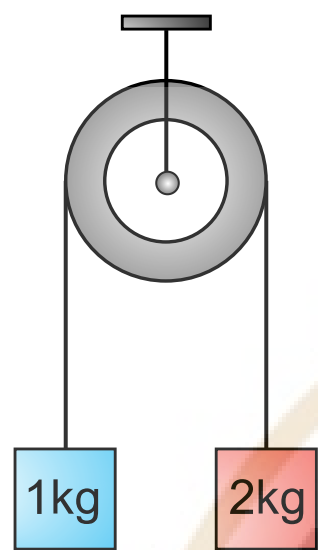
for 10 seconds and moved it in its direction, then the force was ceased,

if the body stopped after covering a distance 50 m on the plane after ceasing the force,

then the ratio between the magnitude of the friction force generated during the motion

and the magnitude of the force acting on the body=.....

- 7 : 12
- 5 : 7
- 5 : 12
- 12 : 35



In the figure shown:

Two bodies of masses 2kg and 1kg are connected by a light string passing over a smooth pulley,

if the system moved from rest and the greater mass stopped after 1 sec,

then the string will be tensioned again after time.....second.

- $\frac{2}{3}$
- $\frac{1}{3}$
- $\frac{1}{2}$
- 1

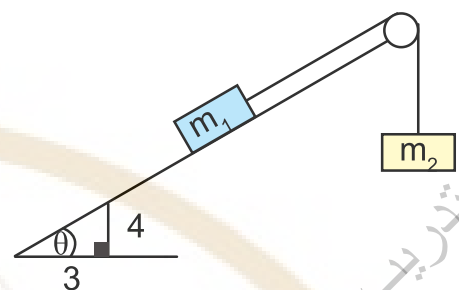
A particle moves in a straight line where its position (x) meter is given by the relation : $x^2 = t^2 + 1$, where t(sec)

then the acceleration of the motion (a) m/sec² is given by the relation

- $a = \frac{1}{x^3}$
- $a = \frac{-t}{x^3}$
- $a = \frac{-t^2}{x^3}$
- $a = \frac{1}{x} - \frac{1}{x^2}$



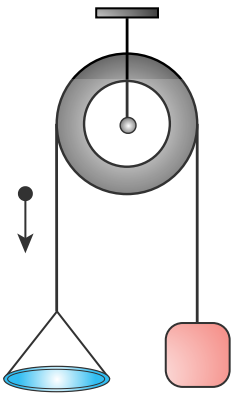
In the opposite figure:



a body of mass $m_1 = 10 \text{ kg}$ is placed on a rough inclined plane,

and the coefficient of kinetic friction between the body and the plane is $\frac{1}{3}$ is tied by an inelastic string passing over a smooth pulley fixed at the top of the plane a body of mass $m_2 = 4 \text{ kg}$, is suspended vertically from the other end of the string, the system is moving where m_1 is sliding down the plane with acceleration $a \text{ (m/sec}^2\text{)}$, if a mass m is added to m_2 the system is moving in the opposite direction with acceleration $a \text{ (m/sec}^2\text{)}$ then.....

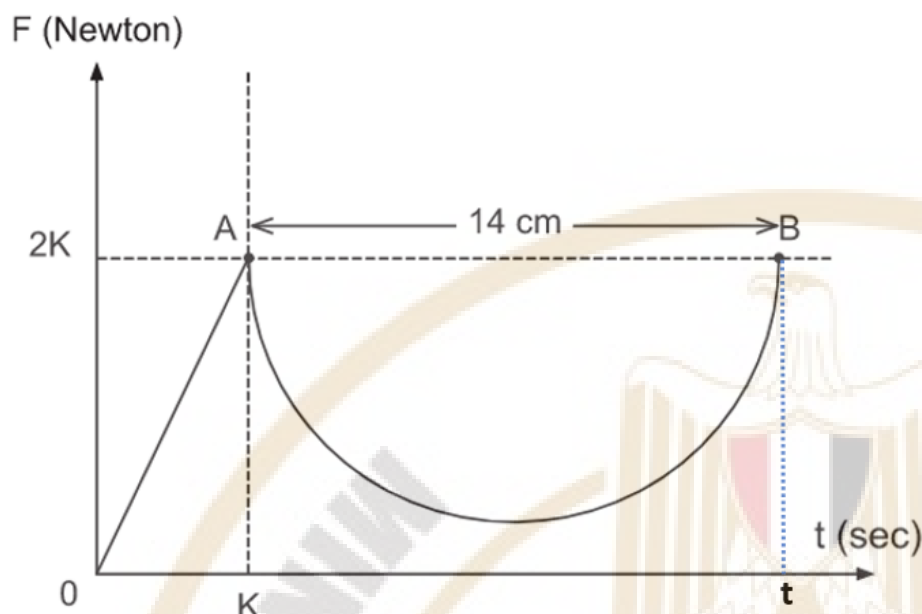
- $9 < m < 10$
- $m = 6$
- $4 < m < 6$
- $6 < m < 9$



In the figure shown:

A body and a pan each of mass (m) kg are connected by a light string passing over a smooth pulley, the system is at rest, if a body of mass (m) kg fell on the pan hitting it with velocity v_o , then the system moved with velocity v , where $v = \dots\dots\dots$

- $\frac{1}{3} V_o$
- $\frac{1}{4} V_o$
- $\frac{1}{2} V_o$
- V_o



The figure shown represents, the (force - time) graph, the arc $\widehat{AB}$ represents a semi circle of diameter 14 cm, if the impulse during t seconds from the beginning is 51 Newton. sec.(consider $\pi = \frac{22}{7}$), then k =

- 4
- 28
- 18
- 32

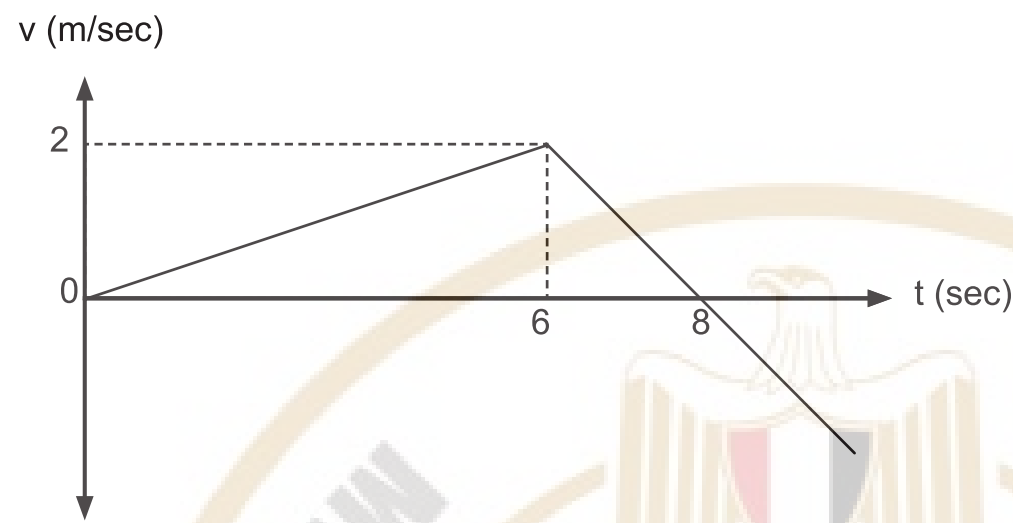
A teacher discussed with his students the following problem, a body of mass $\frac{1}{2}$ kg moves in a straight line under the action of a force in the direction of its motion, if the velocity of the body $v = 5X\sqrt{X}$ where v (m/sec) and X is the position of the body after t (sec) and asked them to calculate the work done by the force from $X = 0$ to $X = 2$,

Omer's solution is $w = m \int_{v(0)}^{v(2)} v \, dv$ and

Khaled's solution is finding $F = \frac{d(mv)}{dt}$, then $w = \int_0^2 F \, dX$,

then.....

- both of them are correct
- Khaled only is correct
- Omer only is correct
- both of them are wrong



The figure represents the (velocity - time) graph for a body moves in a straight line starting from the original point (0), then the body came back to the point (0) after time =.....sec

- 12
- 4
- 8
- 16

A particle moves in a straight line under the action of a force of magnitude $F(x)=6x^2$ in a direction inclined to the direction of motion by an angle of measure 60° where x is the position of the particle (meter), F (Newton)

then the change in the kinetic energy of the particle when it moves from $x = 2$ to $x = 3$ is.....joule

- 19
- 15
- 5
- 57

