03 November 2020 18:34

Dynamics.

Slide (1)

formula.

$F = ma$

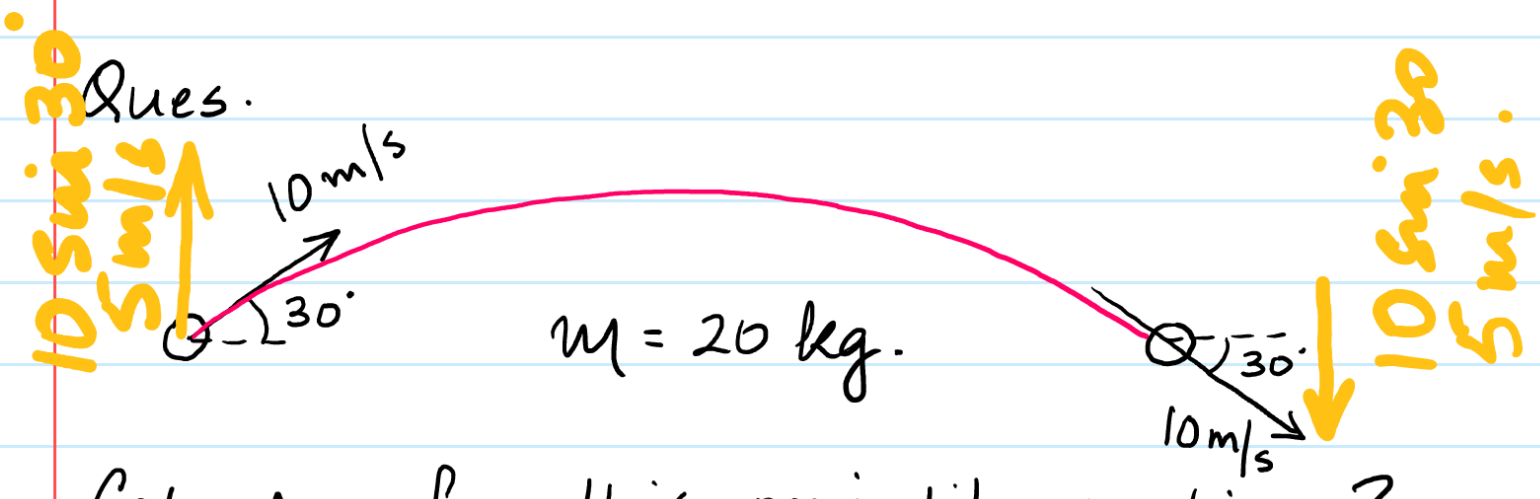
$p = mv$

$\Delta p = F \cdot t$.

$\Delta p = p_f - p_i$

Impulse $= \Delta p = F \cdot t$.

Ques.



Cal Δp for this projectile motion?

① Δp (in the horizontal plane).

Since Hv remains Constant throughout

$\therefore$ Δp (in the horizontal plane) $= 0$

② Δp (in the vertical plane)

$+\downarrow \Delta p = p_f - p_i$ *

$= (20)(5) - (20)(-5)$

$= 200$ Ns.

OR

$+\uparrow \Delta p = p_f - p_i$ *

$= (20)(-5) - (20)(5)$

$= -200$ Ns.

my suggestion / CIE They take final direction as positive.

- How to obtain a relationship b/w momentum of an object (p) and its Kinetic Energy (K.E)

Prove that $K.E = \frac{p^2}{2m}$

$p = mv$

make v the subject

$v = \frac{p}{m}$

replace this answer into eq ①

$K.E = \frac{1}{2} m v^2 \rightarrow ①$

$K.E = \frac{1}{2} m \left(\frac{p}{m}\right)^2$

Simplify.

$K.E = \frac{p^2}{2m}$ (proved)