

MAGNITUDES FÍSICAS

- M → MASA (kg)
- I → INT. DE LA CORRIENTE ELÉCT. (Amperio = A)
- L → LONGITUD (m)
- T → TIEMPO (s)
- θ → TEMPERATURA (Kelvin = K)
- N → CANTIDAD DE SUSTANCIA (mol)
- J → INT. LUMINOSA (candela = cd)

MAG. AUXILIARES

- Ángulo plano (rad)
- Ángulo sólido (sr)

MAG. ESCALARES

- ✓ TODAS LAS FUNDAM.
- ✓ ÁREA = L^2
- ✓ VOLUMEN = L^3
- ✓ DENSIDAD = ML^{-3}
- ✓ VELOCIDAD = LT^{-1}
- ✓ RAPIDEZ = LT^{-1}
- ✓ PERÍODO = T
- ✓ FRECUENCIA = T^{-1}
- TRABAJO } ML^2T^{-2}
- ENERGÍA }
- CALOR }

MAG. VECTORIALES

- ✓ TORQUE O MOMENTO DE UNA FUERZA = ML^2T^{-2}
- ✓ COPLA O PAR = ML^2T^{-2}
- ✓ VELOCIDAD LINEAL = LT^{-1}
- ✓ Veloc. Angular = T^{-1}

ACELERACIÓN LINEAL = LT^{-2}

ACEL. ANGULAR = T^{-2}

FUERZA = MLT^{-2}

CANTIDAD DE MOVIM. = MLT^{-1}

IMPULSO = MLT^{-1}

✓ $1m = 10^2cm$
 $1cm = 10^{-2}m$

✓ $1kg = 1000g$

$1micro = 10^{-6}$
 $1micra = 10^{-6}m$

MRU

- Veloc. CONSTANTE $\left\{ \begin{array}{l} \vec{a} = \vec{0} \\ \text{RAPIDEZ} = |\vec{v}| = \text{CONST.} \end{array} \right.$

- $d = v \cdot t$

- $T_e = \frac{d}{v_1 + v_2}$

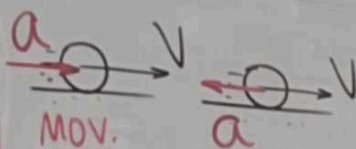
- $T_a = \frac{d}{v_1 - v_2}$

- $\vec{v}_{\text{LOC. MEDIA}} = \frac{\vec{d}_{\text{ESP.}}}{t_{\text{TOTAL}}} = \frac{\Delta \vec{x}}{\Delta t}$

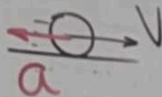
$\text{RAPIDEZ MEDIA} = \frac{e}{t_{\text{TOTAL}}}$

MRUV:

$\vec{a} = \text{CONST.}$



MOV.
ACCELERADO
MRUA



MOV.
DESACCELERADO
MRUD

$\vec{a}_m = \frac{\Delta \vec{v}}{\Delta t}$

$A = v_0$
 $B = v_f$
 $\Delta \vec{v} = \sqrt{A^2 + B^2 - 2AB \cos \alpha}$

1) $v_f = v_0 \pm a \cdot t$

2) $v_f^2 = v_0^2 \pm 2a \cdot d$

3) $d = v_0 \cdot t \pm \frac{1}{2} a t^2$

4) $d = \left(\frac{v_0 + v_f}{2} \right) t$

5) $d_n = v_0 \pm \frac{1}{2} a (2n-1)$

GRÁFICOS DEL MOVIMIENTO

Left graph: X vs. t . Line labeled MRU . Equation: $X_F = X_0 + v t$. Angle θ is marked, with note $-g\theta = \vec{v}$.

Right graph: X vs. t . Curve labeled $MRUV$. Equation: $X_F = X_0 + v_0 t + \frac{1}{2} a t^2$.

GRÁFICOS DEL MOVIMIENTO

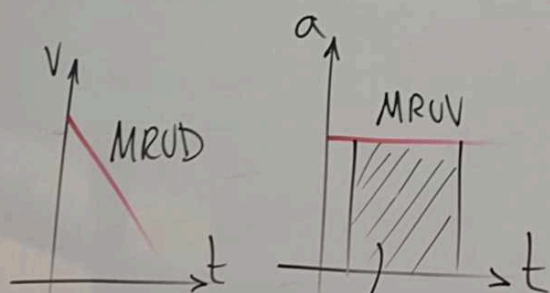
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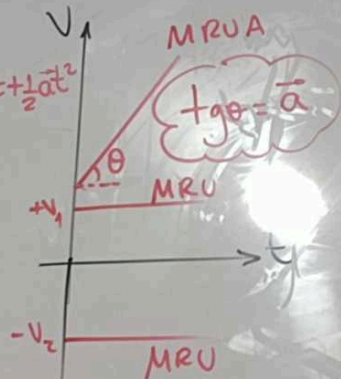
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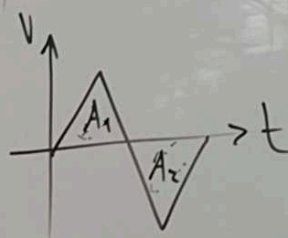
$$A_{FE_1} = \Delta V = \vec{V}_F - \vec{V}_0$$



A hand-drawn graph showing the relationship between velocity (V) and time (t). The vertical axis is labeled V and the horizontal axis is labeled t . A horizontal line at $-v_1$ is labeled MRU . A horizontal line at $-v_2$ is labeled MRU . A line starting from $-v_1$ with a positive slope is labeled $MRUA$. A cloud-like shape contains the text $t_{90} = \bar{a}$. The angle between the horizontal axis and the $MRUA$ line is labeled θ . The vertical distance between the two horizontal lines is labeled $\frac{1}{2}at^2$.

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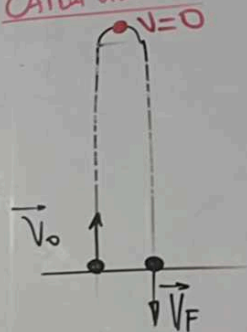
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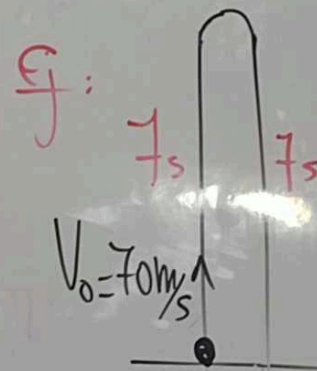
$$\vec{d}_{\text{esp.}} = A_1 - A_2$$

$$C = A_1 + A_2$$

MOVIMIENTO VERTICAL EN CAIDA LIBRE (M.V.C.L)



$$|\vec{V}_0| = |\vec{V}_F|$$



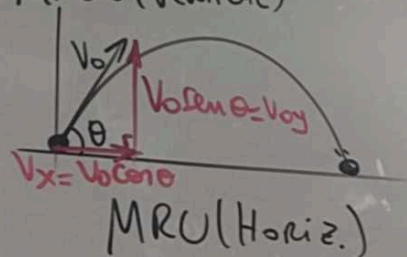
$$\begin{aligned} a &= g \\ d &= h \end{aligned}$$

$$T_{\text{velo}} = \frac{2V_0}{g}$$

$$H_{\max} = \frac{V_0^2}{2g} = \frac{1}{2} v_{\text{subida}}^2$$

$$H_{\max} = \frac{1}{8} g t_{\text{vuelo}}^2$$

Mov. Parabólico en
Caída Libre: (M.P.C.L)
MRUV (Vertical)



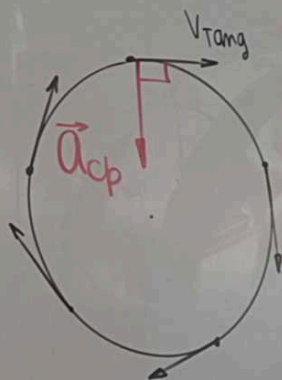
$$T_{\text{vuelo}} = \frac{2V_{0y}}{g} = \frac{2V_0 \sin \theta}{g}$$

$$D = V_x \cdot T_{\text{vuelo}}$$

$$D = V_0 \cos \theta \left(\frac{2V_0 \sin \theta}{g} \right) = \frac{2V_0^2 \sin \theta \cos \theta}{g}$$

$$D = \frac{V_0^2 \sin 2\theta}{g}$$

M.C.U



$\vec{V}_{\text{Tang}} = \text{Variable}$

$|\vec{V}_{\text{Tang}}| = \text{CONST.}$

$\vec{\omega} = \text{CONST.}$
 Periodo (T) = CONST.
 Frecuencia (f) = CONST.
 $|\vec{a}_{cp}| = \text{CONST.}$

1) $L = \theta R$

2) $\omega = \frac{\theta}{t}$

3) $V_T = \frac{L}{t}$

4) $V_T = \omega R$

5) $\omega = \frac{2\pi}{T} = 2\pi f$

Hz

1 RPM = $\frac{1 \text{ rev}}{\text{min}} = \frac{2\pi \text{ rad}}{60 \text{ s}}$

1 RPS = 1 Hz = $\frac{1 \text{ rev}}{\text{s}} = \frac{2\pi \text{ rad}}{\text{s}}$

6) $a_{cp} = \frac{V_{\text{Tang}}^2}{R} = \omega^2 R$

M.C.U.V:

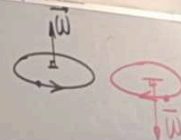
$|\vec{a}_{\text{Tang}}| = \text{CONST.}$

$\vec{\alpha} = \text{ACEL. ANGULAR} = \text{CONST.}$

1) $V_f = V_0 \pm a_{\text{tang}} t$

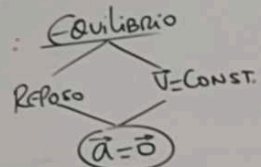
2) $V_f^2 = V_0^2 \pm 2a_{\text{tang}} L$

3) $L = V_0 t \pm \frac{1}{2} a_{\text{tang}} t^2$



LEYES DE NEWTON

1ª Ley:



1ª Condición $\sum \vec{F} = \vec{0}$

2ª Condición $\sum \vec{M}_o = \vec{0}$

2ª Ley:

$$\vec{a} = \frac{\vec{F}_{\text{re}}}{m}$$

$$\vec{F}_{\text{re}} = m\vec{a}$$

DINÁMICA LINEAL

$$\vec{F}_{\text{re}} = m\vec{a}$$

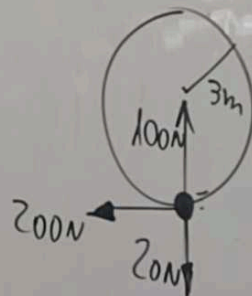
$$\sum F_{\text{FAVOR del MOV.}} - \sum F_{\text{CONTRA el MOV.}} = m\vec{a}$$

DINÁMICA CIRCULAR

$$\vec{F}_{\text{cp}} = \sum F_{\text{RADIALES}}$$

$$F_{\text{cp}} = \sum F_{\text{APUNTAN AL CENTRO}} - \sum F_{\text{SALEN DEL CENTRO}}$$

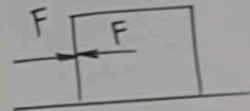
$$F_{\text{tang}} = m a_{\text{tang}}$$



$$F_{\text{cp}} = m a_{\text{cp}}$$

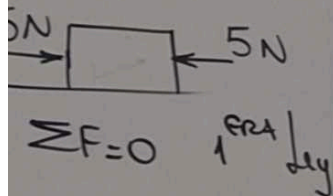
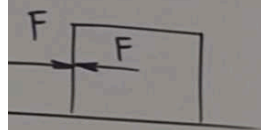
$$80 = 2 \cdot \frac{v^2}{R}$$

3ª Ley:



$$\sum F = 0 \quad 1^\circ \text{ Ley}$$

3^{era} Ley:



TRABAJO

$$W_F = F \cdot d \cdot \cos \theta$$

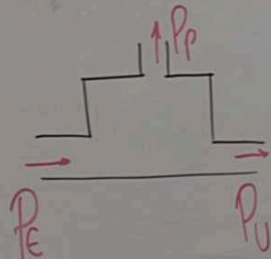
$$W_F = F_{||} \cdot d_{||}$$

POTENCIA

$$P = \frac{W}{t}$$

$$P = F \cdot v$$

$$P_{ENTREG.} = P_{\text{ÚTIL}} + P_{\text{PERDIDA}}$$



$$W_{\text{NETO}} = F_{\text{RESULT.}} \cdot d$$

$$W_{\text{NETO}} = W_{F_1} + W_{F_2} + \dots + W_{F_n}$$

$$W_{\text{NETO}} = \Delta E_{\text{CINÉTICA}}$$

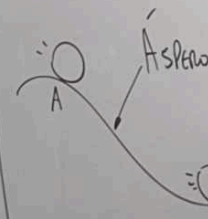
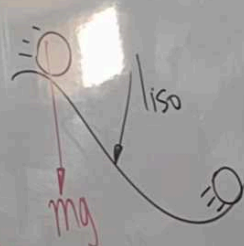
$$E_{\text{CINÉTICA}} = \frac{1}{2} m \cdot v^2$$

$$E_{\text{POTENCIAL GRAVIT.}} = mgh$$

$$E_{\text{POT. ELÁST.}} = \frac{1}{2} kx^2$$

$$E_{\text{MEC}} = \frac{1}{2} mv^2 + mgh + \frac{1}{2} kx^2$$

$$U_{\text{POT. ELÉCT.}} = \frac{k q_1 \cdot q_2}{d}$$



$$W_{\text{ROZ}} = (E_m)_B - (E_m)_A$$

$$- \text{frot.} \cdot d = (E_m)_B - (E_m)_A$$

FUERZAS CONSERVATIVAS

$$= \text{PESO, } F_{\text{ELÁST.}}, F_{\text{ELÉCT.}}$$

HIDROSTÁTICA:

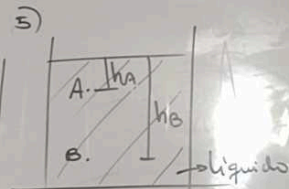
$$1) P = \frac{F_{\perp}}{A}$$

$$2) D = \frac{m}{V}$$

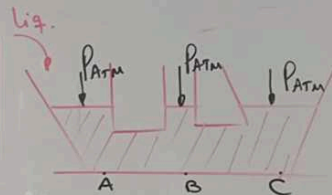
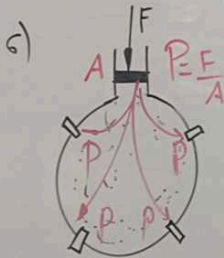
$$3) \gamma = \frac{\text{Peso}}{\text{VOLUMEN}}$$

Peso específico

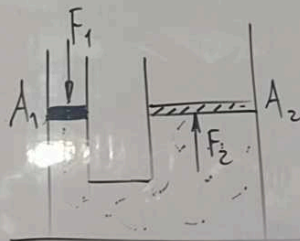
$$4) P_{hid} = D \cdot l_{ig} \cdot g \cdot h$$



$$P_B - P_A = D \cdot l_{ig} \cdot g \cdot (h_B - h_A)$$



$$P_A = P_B = P_C$$



$$\frac{F_1}{A_1} = \frac{F_2}{A_2} \rightarrow \frac{F_1}{F_2} = \frac{A_1}{A_2} = \left(\frac{R_1}{R_2} \right)^2 = \left(\frac{\text{diam}_1}{\text{diam}_2} \right)^2$$



$$E = \text{Peso del líq. derramado}$$

$$E = D \cdot l_{ig} \cdot g \cdot \text{Vol. sumergido}$$

$$E = \text{Peso Real} - \text{Peso Aparente}$$

$$\text{Peso} = mg = D \cdot V \cdot g$$