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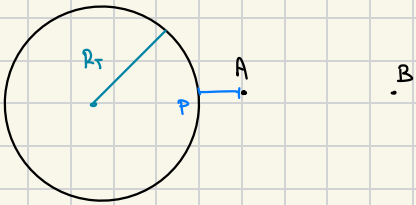


$m = 1{,}1 \cdot 10^4$ kg
M_T
R_T
$PA = 630$ km
$PB = ?$
Energia fornita per andare da A a B è di $1{,}04 \cdot 10^{10}$ J

Si utilizza il teorema Lavoro energia:

$E_f - E_i = W_{nc}$ W_{nc} lavoro fatto dalle forze non conservative

$E_f = E_B = K_B + U_B = \frac{1}{2} m V_B^2 + \left(-G \frac{m M_T}{(R_T + PB)}\right)$ → Dist. tra il punto e il centro dell'altro corpo

$= \frac{1}{2} m \frac{G M_T}{R_T + PB} - \frac{G m M_T}{R_T + PB} = -\frac{1}{2} \frac{G m M_T}{R_T + PB}$

$E_i = E_A =$ come primo $= -\frac{1}{2} \frac{G m M_T}{R_T + PA}$

$E_B - E_A = W_{nc} \rightsquigarrow -\frac{1}{2} \frac{G m M_T}{R_T + PB} - \left(-\frac{1}{2} \frac{G m M_T}{R_T + PA}\right) = W_{nc}$

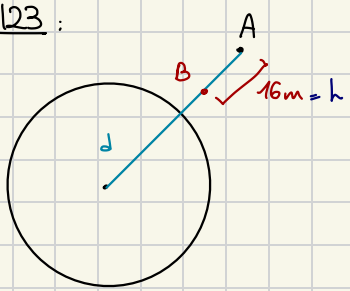
$\frac{1}{2} G m M_T \left(\frac{1}{R_T + PA} - \frac{1}{R_T + PB}\right) = W_{nc}$

$\frac{1}{R_T + PA} - \frac{1}{R_T + PB} = \frac{2 W_{nc}}{G m M_T}$

841 km
12

$\frac{1}{R_T + PB} = \frac{1}{R_T + PA} - \frac{2 W_{nc}}{G m M_T} \rightsquigarrow PB = \left(\frac{1}{R_T + PA} - \frac{2 W_{nc}}{G m M_T}\right)^{-1} - R_T$

n 123 :



$d = 1{,}27 \cdot 10^7\ m$

R_T, M_T

- Quanto tempo impiega a percorre 16 m verso il basso? $AB = 16m$
- $V_B = ?$

Calcolo V_B: Vale la conserv. dell'energia: $E_A = E_B$

$$E_A = K_A + U_A = 0 - \frac{GmM_T}{d}$$

$$E_B = K_B + U_B = \frac{1}{2}mV_B^2 - \frac{GmM_T}{d-16}$$

$$E_A = E_B \rightsquigarrow -\frac{GmM_T}{d} = \frac{1}{2}mV_B^2 - \frac{GmM_T}{d-16}$$

$$\frac{1}{2}V_B^2 = GM_T\left(\frac{1}{d-16} - \frac{1}{d}\right)$$

$$V_B^2 = 2GM_T\left(\frac{1}{d-16} - \frac{1}{d}\right) = 2GM_T\left(\frac{16}{d(d-16)}\right) \rightsquigarrow V_B = 8{,}89\ \frac{m}{s}$$

Per il pto 1: Suppongo moto acc. uniforme con $a = g$ e risolvo.

Con queste supposizione ho:

$$s(t) = h - \frac{1}{2}gt^2 \rightsquigarrow h = \frac{1}{2}gt^2 \rightsquigarrow t = \sqrt{2\frac{h}{g}} \approx$$