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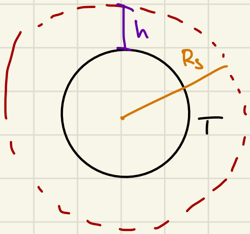

$h = 600\,km$

Terre $R_T = 6{,}37 \cdot 10^3\,km$

$M_T = 5{,}97 \cdot 10^{24}\,kg$

1) $v_s = ?$

2) $\omega_s = ?$

3) $T_s = ?$

1) $v_s^2 = \frac{G M_T}{R_s} = \frac{G M_T}{h+R_T} \leadsto v_s = \sqrt{\frac{G M_T}{h+R_T}} \approx$

2) $\omega_s R_s = v_s \qquad \omega_s = \frac{1}{h+R_T}\sqrt{\frac{G M_T}{h+R_T}} \approx$

3) $T_s = \frac{2\pi}{\omega_s} \qquad T_s = 2\pi(h+R_T) \cdot \sqrt{\frac{(h+R_T)}{G M_T}} \approx$

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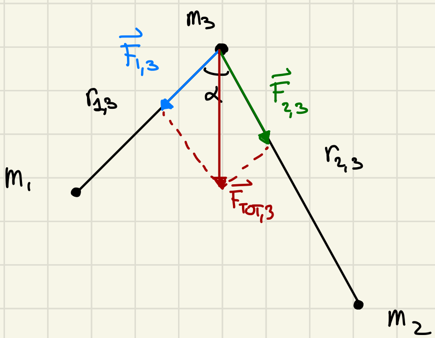


$m_1 = 5{,}13 \cdot 10^{31}\,kg$

$m_2 = 4{,}52 \cdot 10^{32}\,kg$

$m_3 = 1{,}88 \cdot 10^{35}\,kg$

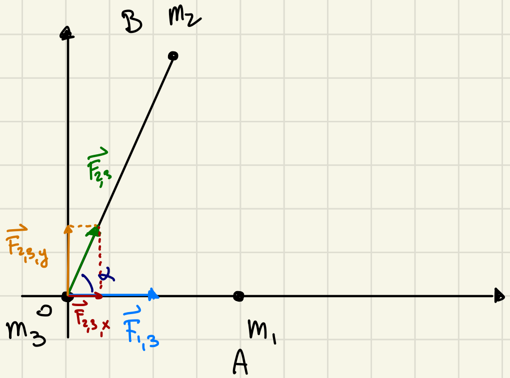
$r_{1,3} = 1{,}42 \cdot 10^{16}\,m$

$r_{2,3} = 3{,}76 \cdot 10^{16}\,m$

$\alpha = 72{,}3°$

$F_{TOT,3} = ?$

$F_{1,3} = G\frac{m_1 m_3}{r_{1,3}^2} \approx \qquad F_{2,3} = G\frac{m_2 m_3}{r_{2,3}^2} \approx$



Piazzo un piano cartesiano in modo che i vettori siano più facili da manipolare

Faccio tutto in componenti e quindi la somma tra vettori la faccio comp. per componente

$$\vec{F}_{1,3} = (F_{1,3} ; 0)$$

$$\vec{F}_{2,3} = (F_{2,3,x} ; F_{2,3,y}) = (F_{2,3} \cdot \cos\alpha ; F_{2,3} \cdot \sin\alpha)$$

Faccio somma componente per componente

$$\vec{F}_{TOT,3} = (F_{1,3} + F_{2,3} \cos\alpha ; F_{2,3} \sin\alpha)$$

Dato che le componenti sono perpendicolari, faccio teorema GF (di Pitagora) e posso trovare il modulo

$$F_{TOT,3}^2 = (F_{13} + F_{23} \cos\alpha)^2 + (F_{23} \sin\alpha)^2 \approx$$

$$\rightsquigarrow F_{TOT,3} \approx 5{,}83 \cdot 10^{24}\ N$$