Answer on Question#41436 – Physics – Mechanics|Kinematics|Dynamics

Moment of inertia of the system: $I = \sum_{i=1}^{4} I_i$

Where I_i is moment of inertia of one particle: $I_i = m_i \cdot R^2$

m_i – mass of the particle; R – the distance to the particle

$$I_1 = m_1 \cdot R_1^2 = 20 \cdot \left(\sqrt{4^2 + 0^2}\right)^2 = 20 \cdot 16 = 320(g \cdot cm^2)$$

$$I_2 = m_2 \cdot R_2^2 = 30 \cdot \left(\sqrt{0^2 + 6^2}\right)^2 = 30 \cdot 36 = 1080(g \cdot cm^2)$$

$$I_3 = m_3 \cdot R_3^2 = 25 \cdot \left(\sqrt{(-4)^2 + 3^2}\right)^2 = 25 \cdot 25 = 625(g \cdot cm^2)$$

$$I_4 = m_4 \cdot R_4^2 = 40 \cdot \left(\sqrt{(-3)^2 + 2^2}\right)^2 = 40 \cdot 13 = 520(g \cdot cm^2)$$

Answer:

Moment of inertia of the system: $I = \sum_{i=1}^{4} I_i = 320 + 1080 + 625 + 520 = \mathbf{2545}(\boldsymbol{g \cdot cm^2})$