$$\therefore \frac{k(t)^2}{m_1 m_2 m_3} = \frac{p_1^2/m_1}{m_2 m_3 (q_2 - q_3)^2} = \frac{p_2^2/m_2}{m_3 m_1 (q_3 - q_1)^2} = \frac{p_3^2/m_3}{m_1 m_2 (q_1 - q_2)^2} = \frac{K}{MI}$$