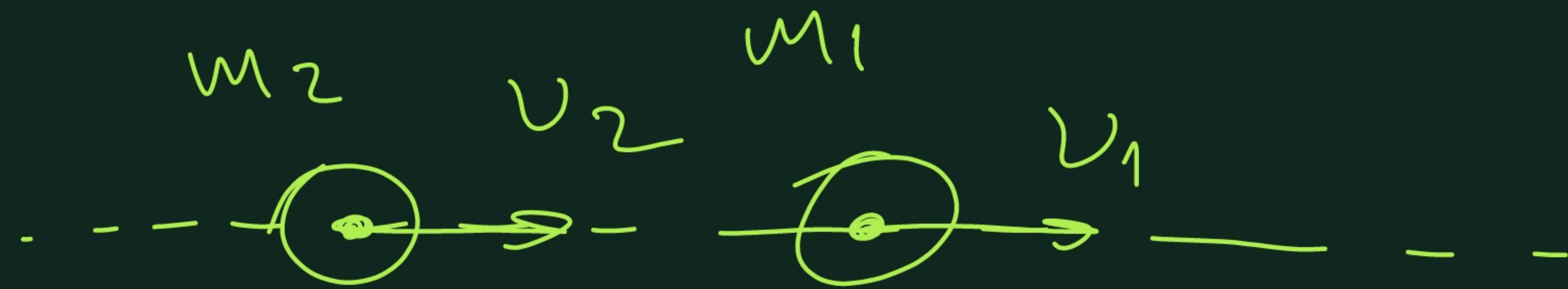


Ερ. 5.6.) $\xrightarrow{(+)}$



Πριν

$$\cancel{m_1 v_1 + m_2 v_2 = m_1 v'_1 + m_2 v'_2} \Rightarrow$$

$(m_1 = m_2)$

$$v_1 + v_2 = v'_1 + v'_2 \Rightarrow$$

$$10 + 20 = 16 + v'_2 \Rightarrow$$

$$v'_2 = 14 \text{ m/s}.$$

$$v_{\text{Gx, πριν}} = v_2 - v_1 = +10 \text{ m/s}$$

$$v_{\text{Gx, μετά}} = v'_2 - v'_1 = +14 \text{ m/s}.$$

Δεν ισχύει

$$v_2 - v_1 = -(v'_2 - v'_1)$$

άρα η υποθέση δεν είναι ελαστική.

Στην κεντρική ελαστική
κρούση αν $m_1 = m_2$ τότε

$$v_2' = v_1$$

και $v_1' = v_2$

Αρα στην προεπιβέβη έχουμε $(1 \leftrightarrow 2)$

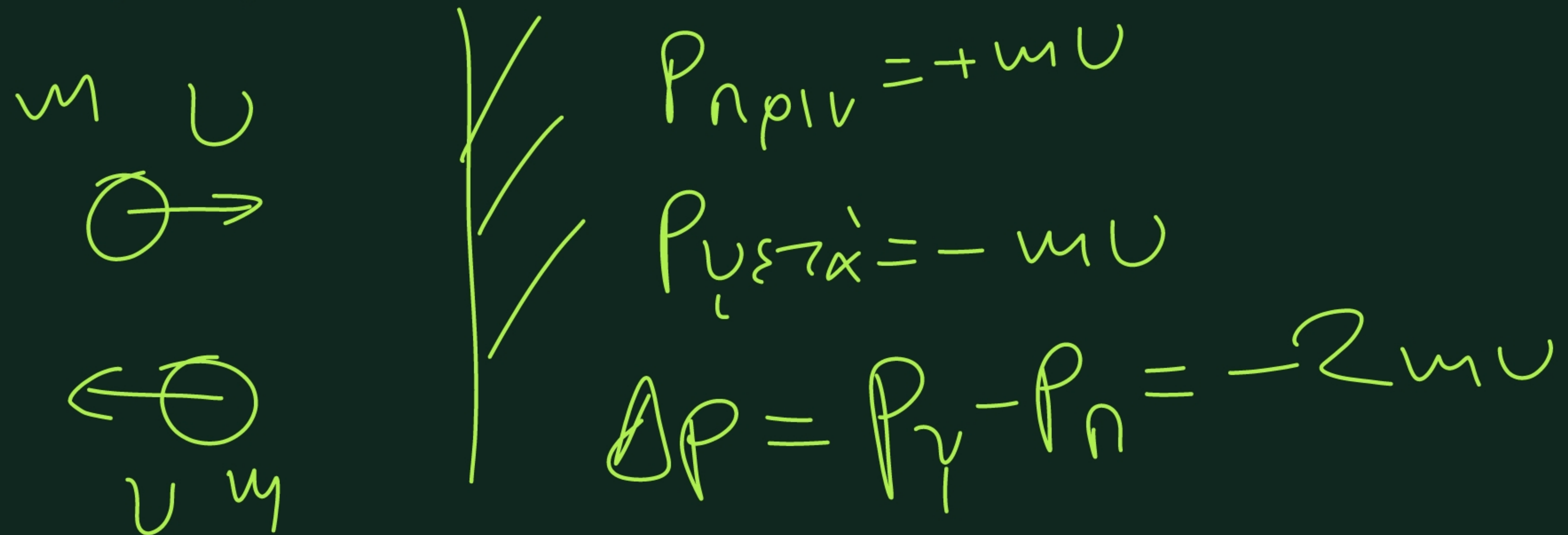
$$v_1' = v_2 = 20 \text{ m/s}$$

$$v_2' = v_1 = 10 \text{ m/s}$$

$$v_1' = \frac{m_1 - m_2}{m_1 + m_2} v_1 + \frac{2m_2}{m_1 + m_2} v_2 \quad (m_1 = m_2)$$

$$v_2' = \frac{2m_1}{m_1 + m_2} v_1 + \frac{m_2 - m_1}{m_1 + m_2} v_2 \quad (m_1 = m_2)$$

(+)



$$P_{n \rightarrow n} = +mv$$

$$P_{v \rightarrow v} = -mv$$

$$\Delta P = P_2 - P_1 = -2mv$$

Κεντρική ελαστική σύγκρουση

$$\frac{1}{2} m_1 v_1^2 + \frac{1}{2} m_2 v_2^2 = \frac{1}{2} m_1 v_1'^2 + \frac{1}{2} m_2 v_2'^2 \Rightarrow$$

$$m_1 v_1^2 - m_1 v_1'^2 = m_2 v_2'^2 - m_2 v_2^2 \Rightarrow$$

$$m_1 (v_1 - v_1')(v_1 + v_1') = m_2 (v_2' - v_2)(v_2' + v_2) \quad (1)$$

$p_{\text{πριν}} = p_{\text{μετά}}$

$$m_1 v_1 + m_2 v_2 = m_1 v_1' + m_2 v_2' \Rightarrow$$

$$m_1 (v_1 - v_1') = m_2 (v_2' - v_2) \quad (2)$$

