10.10 – kinetická energie rovná klidové

$v = ?$

$E = m \cdot c^2$

$E_{kin} = E_0$

$$m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$E_{kin} = E - E_0$

$E - E_0 = E_0$

$$E = \frac{m \cdot c^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$\frac{mc^2}{\sqrt{1 - \frac{v^2}{c^2}}} - mc^2 = mc^2$$

$$mc^2 \left(\frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} - 1 \right) = mc^2$$

$$\frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} = 2$$

$$\sqrt{1 - \frac{v^2}{c^2}} = \frac{1}{2}$$

$$1 - \frac{v^2}{c^2} = \frac{1}{4}$$

$$\frac{v^2}{c^2} = \frac{3}{4}$$

$$v^2 = \frac{3}{4} c^2$$

$$v = \frac{\sqrt{3}}{2} c$$