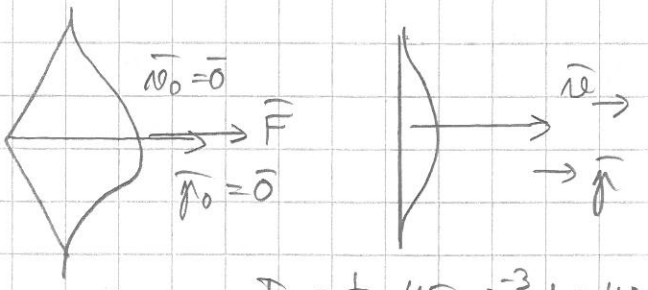
$N\text{II}: \sum \vec{F} = m\vec{a} \Rightarrow \vec{F} = m\vec{a} = m\frac{\Delta\vec{v}}{\Delta t} = m\frac{\vec{v}-\vec{v}_0}{\Delta t} \quad | \cdot \Delta t$

$\Leftrightarrow \underbrace{\vec{F}\Delta t}_{=\vec{I}} = m(\vec{v}-\vec{v}_0) = m\vec{v} - m\vec{v}_0 = \vec{p} - \vec{p}_0 = \Delta\vec{p}$

$\Rightarrow \boxed{\vec{I} = \Delta\vec{p}}$ IMPULSSIPERIAATE

$[I] = Ns = kg\frac{m}{s^2}\cdot s = kg\frac{m}{s} = [p]$ ✓

15.9



$m = 36g$

Jousipyssyn jänteen muodon aiheuttaman impulssin suuruus = $F(t)$-kuvaajan alle jäävän pinta-ala

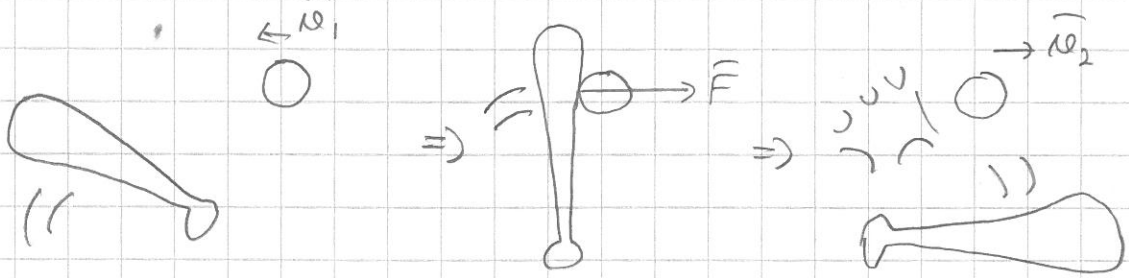
$I = \frac{1}{2}\cdot 45\cdot 10^{-3}\,s \cdot 110\,N = 2{,}475\,Ns$

Impulssiperiaate: $\vec{I} = \Delta\vec{p}$

$\Rightarrow I = \Delta p = p - \underbrace{p_0}_{=0} = mv \quad | : m$

$\Leftrightarrow v = \frac{I}{m} = \frac{2{,}475\,Ns}{0{,}036\,kg} = 68{,}75\frac{m}{s} \approx \underline{69\frac{m}{s}}$

15.10



$m = 24\,g$
$v_1 = 27\frac{m}{s}$
$v_2 = 41\frac{m}{s}$
$\Delta t = 3{,}0\,ms$
$F = ?$