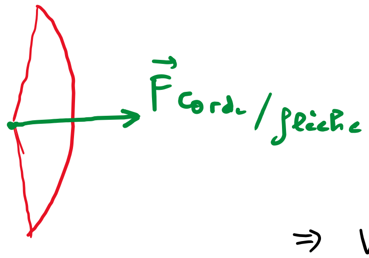
6.8 Thm. En. cinétique : $W_{\vec F_{corde/flèche}} = \vec F_{corde/flèche} \cdot \Delta \vec r = E_{cin\,f} - E_{cin\,i} = E_{cin\,f}$

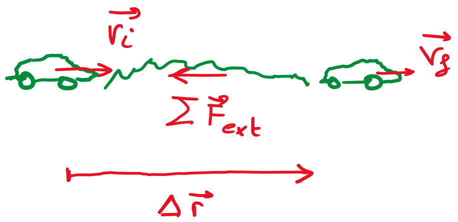


$W = 65\,N \cdot 0{,}9\,m = \frac{1}{2} \cdot m \cdot v_f^2 = \frac{1}{2} \cdot 0{,}075 \cdot v_f^2$

$\Rightarrow v_f = \sqrt{\frac{2 \cdot 65 \cdot 0{,}9}{0{,}075}} = \underline{\underline{39}}\ m/s$

6.9 Thm. Ecin : $W_{\Sigma \vec F_{ext}} = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_i^2 = \frac{1}{2} 70 (11{,}3^2 - 6{,}1^2) = \underline{\underline{3{,}2 \cdot 10^3}}\ J$

6.10



(a). "TEC" : $W_{\Sigma \vec F_{ext}} = \Sigma \vec F_{ext} \cdot \Delta \vec r$

$= \|\Sigma \vec F_{ext}\| \cdot \Delta r\,(-1) = E_{cin\,f} - E_{cin\,i}$

$\Rightarrow \|\Sigma \vec F_{ext}\| = \frac{E_{cin\,i} - E_{cin\,f}}{\Delta r} = \frac{1}{2} \cdot 1200 \cdot \frac{20^2 - 8^2}{50}$

$= \underline{\underline{4{,}0 \cdot 10^3}}\ N$

(b). $\Sigma \vec F_{ext}$ opposé à $\vec v_i, \vec v_f$

6.11 "TEc" : $W_{\vec F_{rétrofusées}} = \vec F \cdot \Delta \vec r = -F \cdot \Delta r = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_i^2$

$\Rightarrow \frac{1}{2} m v_f^2 = \frac{1}{2} m v_i^2 - F \cdot \Delta r \Rightarrow v_f = \sqrt{v_i^2 - \frac{2 F \cdot \Delta r}{m}} = \left(11'000^2 - \frac{2 \cdot 4 \cdot 10^5 \cdot 2{,}5 \cdot 10^6}{50'000}\right)^{1/2}$

$= \underline{\underline{9{,}0 \cdot 10^3}}\ m/s$

6.12 (a). TEc $\Rightarrow W_{\vec F_{sur\,balle}} = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_i^2 = \frac{1}{2} m v_f^2 = \frac{1}{2}\, 0{,}045 \cdot 41^2$

$= \underline{\underline{38}}\ J$

(b). On a donc $38\,J = \vec F_{sur\,balle} \cdot \Delta \vec r = F_{sur\,balle} \cdot 0{,}01$

$\Rightarrow F_{sur\,balle} = \frac{38}{0{,}01} = \underline{\underline{3{,}8 \cdot 10^3}}\ N$