Kap 4. Energi

Arbeid : $W = \langle tallverdi \rangle [J]$

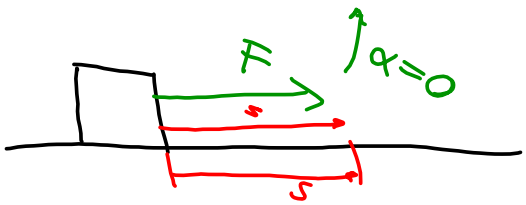
$W = F \cdot s \; [N \cdot m]$

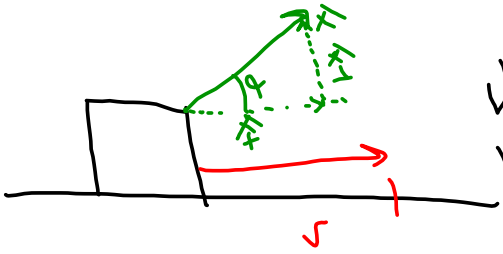
kraften

avstand

Joule $= N \cdot m$

$W = F \cdot s \cdot \cos\alpha$





$W = F \cdot s \cdot \cos\alpha$

$W = F_x \cdot s$

F_x i samme retning

Energi

E_x = <tallverdi> [J]

hva slags energi angis med x

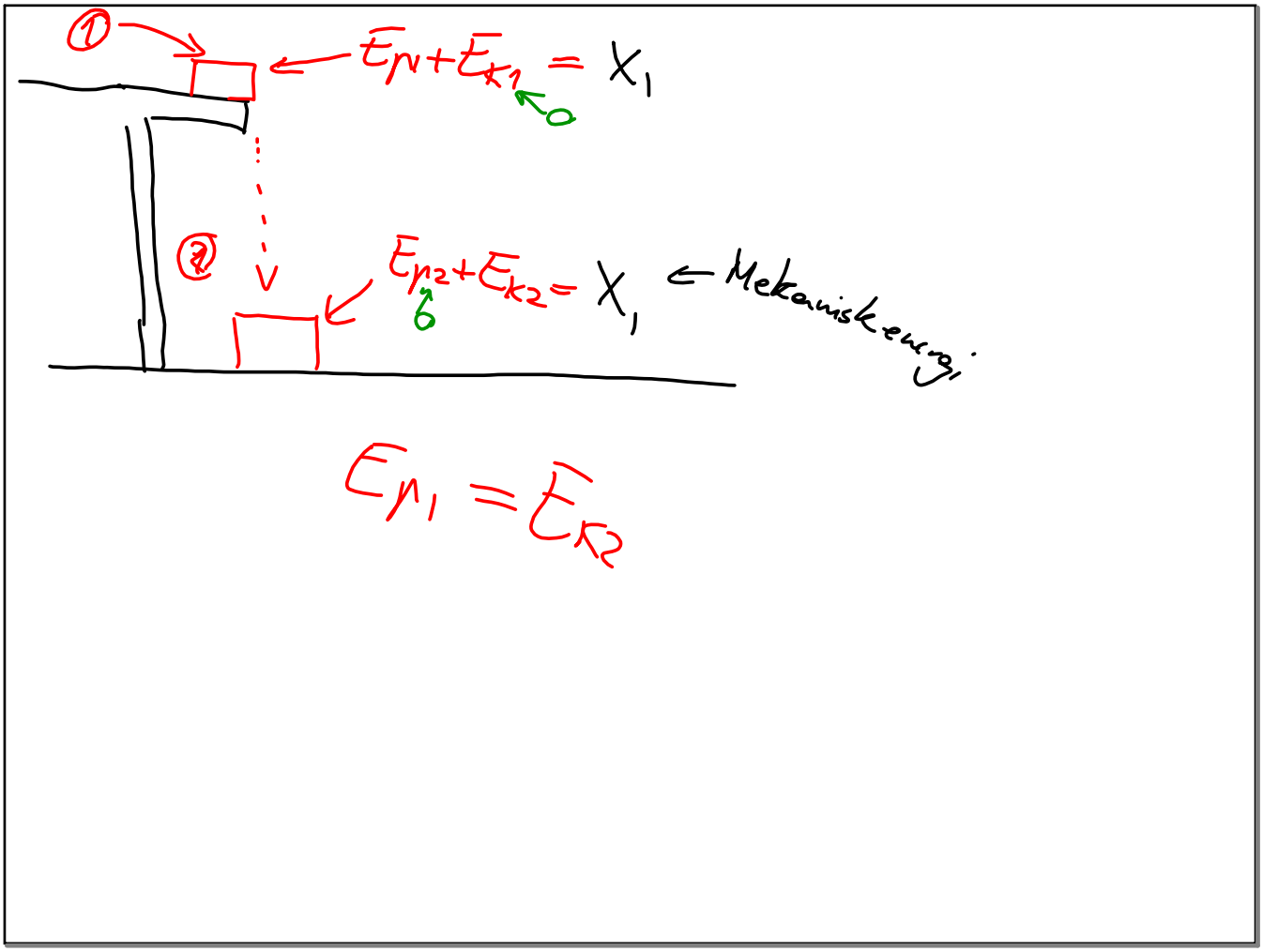
Mekanisk energi

- Kinetisk energi $E_k \Rightarrow$ fart, masse

  Bevegelsesenergi

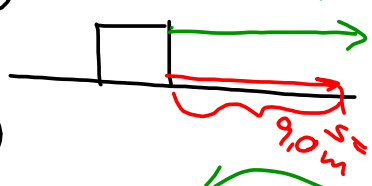
- Potensiell energi $E_p \Rightarrow$ tyngdekraft · høyde

  et eksempel


①
$E_{p1}+E_{k1}=X_1$
0
②
$E_{p2}+E_{k2}=X_1$
0
← Mekanisk energi
$E_{p1}=E_{k2}$

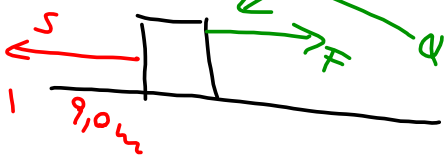
4.02 $W = F \cdot s \cdot \cos\alpha$

a)



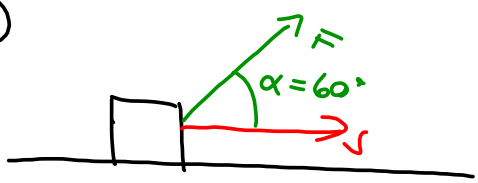
$W = 90\,N \cdot 9{,}0\,m \cdot \cos 0° = 810\,J$

b)



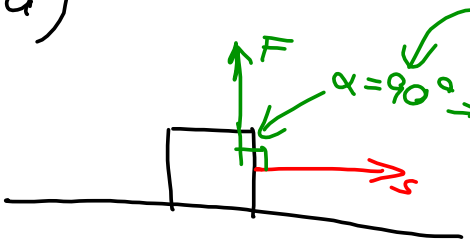
$W = 90 \cdot 9{,}0 \cdot \cos 180° = -810\,J$

c)



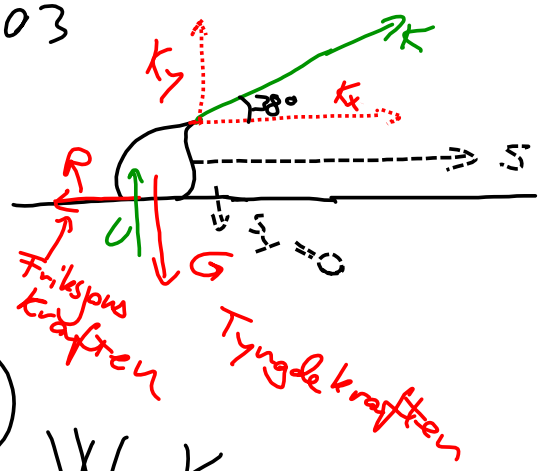
$W = 90 \cdot 9{,}0 \cdot \cos 60° = 405\,J$

d)



$W = 90 \cdot 9{,}0 \cdot \cos 90° = 0\,J$

4.03



b) $W = K \cdot s \cdot \cos 38° = 300[N] \cdot 5{,}0[m] \cdot \cos 38°$

$= 1182[N \cdot m] = 1182[J]$

c) $W_G = K_y \cdot s_y = 0$

Kinetisk Energi : $E_k = $?

fart, masse

Går ut ifra $W = \sum F \cdot s$

$\sum F = m a$ ⇐ Newtons 2. lov

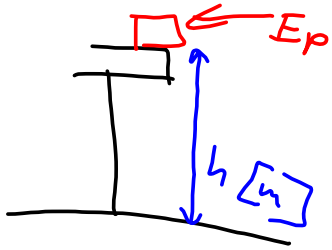
$W = m \cdot a \cdot s$

$W = m \cdot \frac{1}{2}(v^2 - v_0^2) = \frac{1}{2} m v^2 = E_k$ ($v_0 \to 0$)

$2as = v^2 - v_0^2$

$as = \frac{1}{2}(v^2 - v_0^2)$

Potensiell energi (tyngdefeltet) E_p



$E_p = m \cdot g \cdot h$

- m: masse
- g: tyngdekraften
- h: høyden