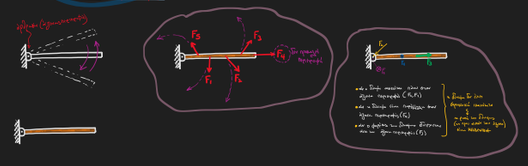
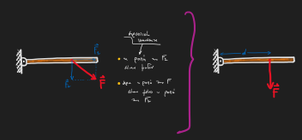
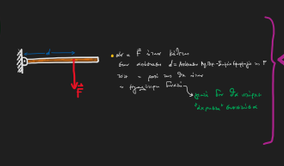
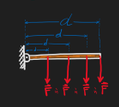
Ροπή $\vec{\tau}$









Αρκεί ίσως
Η ροπή είναι ανεξάρτητη
του σημείου
του σημείου εφαρμογής του $\vec{F}$
και του εφ. σημείου

$\boxed{\tau \sim d}$

$\tau_{F''} > \tau_{F'} > \tau_F$ → $\boxed{\tau \sim F}$

Δυνατότητα ίσωσης μόνο

$$\boxed{\tau_F = F \cdot d}$$

$(F \perp d)$

S.I.: 1 N·m ($\vec{\tau}$: Δύναμη)

(W: ενέργεια)

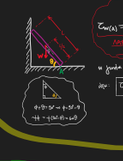
Γενική περίπτωση ροπής

$\vec{\tau}_F = \vec{\tau}_{F_\parallel} + \vec{\tau}_{F_\perp} \Rightarrow \tau_F = \tau_{F_\parallel} = F_\perp \cdot d = F \cdot \eta\mu\theta \cdot d$

$$\boxed{\tau_F = F \cdot d \cdot \eta\mu\theta}$$

$\vec{F} \parallel d$	$\vec{F} \perp d$	$(\widehat{\vec{F}, d}) = \phi$
$\boxed{\tau_F = 0}$	$\boxed{\tau_F = F \cdot d}$	$\boxed{\tau_F = F \cdot d \cdot \eta\mu\phi}$

Η ιδέα του ροπής
έχει ΠΑΝΤΑ κάθετο
Δεν υπάρχει τύπος:
$\tau = F \cdot d \cdot \sigma\upsilon\nu\theta$



$\tau_{w(A)} = w \cdot \frac{L}{2} \cdot \sigma\upsilon\nu\theta$

ΑΡΚΕΙ ΜΟΝΟ ΤΟΝΟΣ

Η γραμμή $\vec{w}$ κ.λ.π. $\vec{F}_\perp$ είναι ~ ϕ

Δηλ. $\boxed{\tau_w = w \cdot \frac{L}{2} \cdot \eta\mu\theta} = w \cdot \frac{L}{2} \cdot \eta\mu(90 - \phi) = w \cdot \frac{L}{2} \cdot \sigma\upsilon\nu\phi$

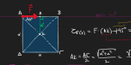
$w \cdot \sigma\upsilon\nu\phi = w_\perp$

$\tau_w^{\vec{F}} = \tau_w^{\vec{F}_\parallel} + \tau_w^{\vec{F}_\perp} = \tau_w^{\vec{F}_\perp} = w_\perp \cdot \frac{L}{2} = w \cdot \sigma\upsilon\nu\phi \cdot \frac{L}{2}$

Δείτε ίσως και τη ροπή

$\eta\mu\theta = \frac{\sigma\upsilon\nu}{2\sigma\upsilon\nu} = \frac{1}{2} \Rightarrow \boxed{\sqrt{1 - \eta\mu^2}}$

$\tau_F = F \cdot \underbrace{d \cdot \eta\mu\theta}_{d'} \Rightarrow \boxed{\tau_F = F \cdot d'}$



$\tau_{F(K)} = F \cdot (KΔ) \cdot \eta\mu 45° = F \cdot \frac{\alpha\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} = \frac{F \cdot \alpha \cdot \sqrt{2}^2}{4} = \frac{F \cdot \alpha \cdot 2}{4} = \frac{F \cdot \alpha}{2}$

$AΔ = AΓ = \frac{\sqrt{AΒ^2 + ΒΓ^2}}{2} = \frac{\sqrt{\alpha^2 + \alpha^2}}{2} = \frac{\alpha\sqrt{2}}{2}$

Η: Δεν υπάρχει $d' = \frac{\alpha}{2} \rightsquigarrow \tau_F = F \cdot d' = F \cdot \frac{\alpha}{2}$