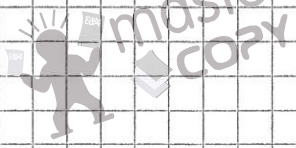
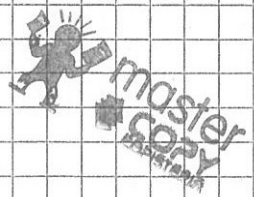
SBOBINATURE

delle LEZIONI





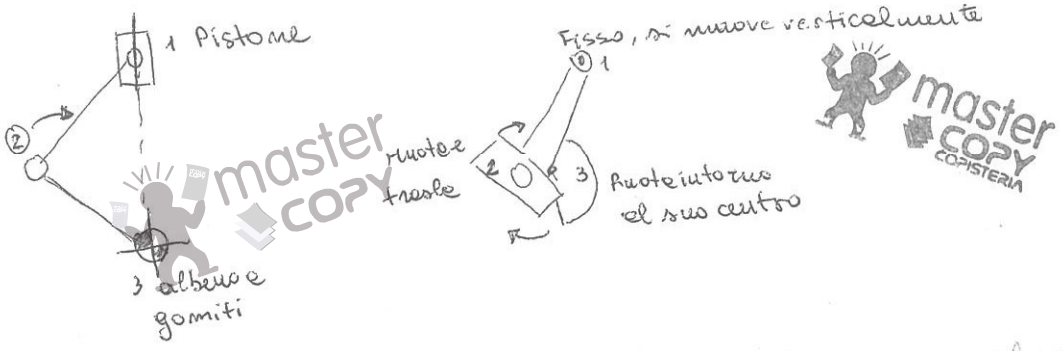


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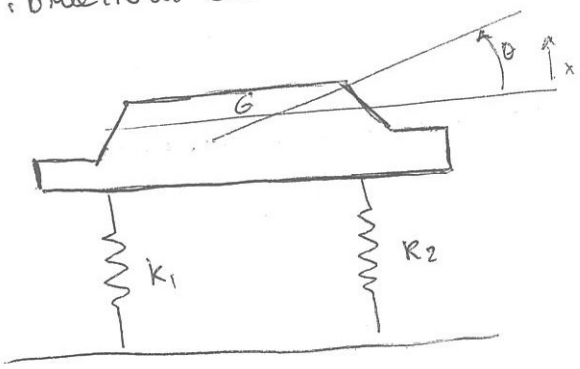
In meccanica è utile schematizzare bene il problema

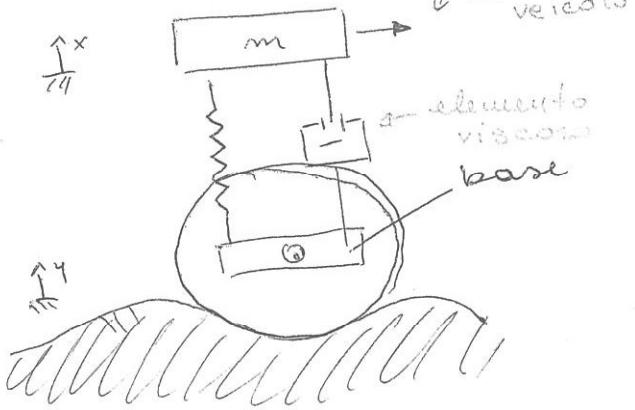
Esempi

- Motore a combustione interna (sistema pistone - biella - manovella)



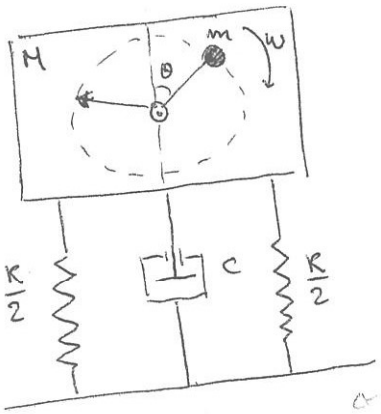
- Vibrazioni auto (elemento elastico / viscoso)





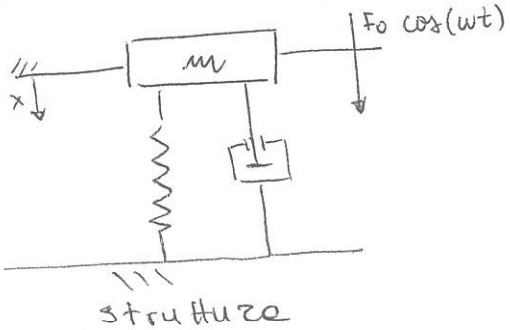
- Supporti antivibranti

è una LAVATRICE



elementi antivibranti

schema



struttura

Argomenti principali

0) Richiami (op. con vettori, equilibrio, energia)
1) Macchine e Meccanismi (collegamenti fra elementi, GDL, forze e rendimenti) — def. rendimento meccanico
2) Cinematica (velocità, accelerazione, traiettorie)
3) Meccanica dei Contatti (attrito, usura) — leggi base
4) Contatti Lubrificati (idrodinamica, idrostatica, cuscinetti) — esempi
5) Trasmissioni Meccaniche (ruote dentate, camme, giunti, organi flessibili)
6) Dinamica delle Macchine (forze di inerzia e momenti, sistemi di elementi rigidi)
7) Dinamica dei Sistemi Vibranti (elementi deformabili, vibrazioni)

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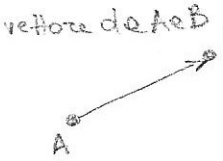
VETTORI

- Grandezze scalari (numero + unità di misura)
- Grandezze vettoriali (direzione + verso + modulo)

- Notazioni
- Punto di applicazione

Vettore: $\vec{F}$, $\underline{F}$, $\mathbf{F}$, $\bar{F}$ — $\mathbf{F}$ nel testo — $\mathbf{v}$, $\mathbf{a}$ (vettore)

Modulo: $|F|$, F — F nel testo — v, a



AB (da A a B) (B − A)



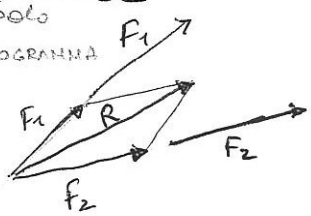
BA (da B a A) (A − B)

Soluzioni grafiche

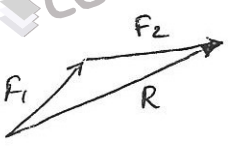
Somme

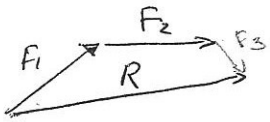
$\textcircled{R} = F_1 + F_2$

1° modo — PARALLELOGRAMMA



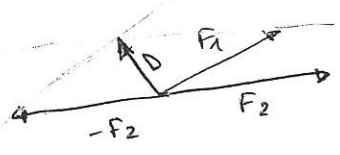
2° modo — Testa-Coda





$\textcircled{R} = F_1 + F_2 + F_3$

Differenze



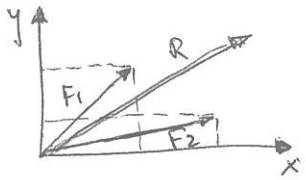
$\textcircled{D} = F_1 - F_2$
$= F_1 + (-F_2)$

- Soluzioni qualitative

$R = F_1 + F_2$

Cosa importante: FISSARE il sistema di Riferimento e poi scrivere le equazioni in MODO COERENTE con il MODO SCELTO

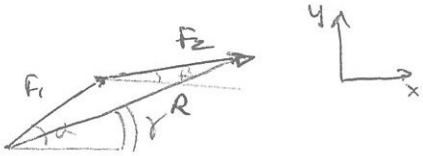
2 componenti nel piano, 3 nello spazio



$R = R_x \hat{i} + R_y \hat{j}$

$R_x = F_{1x} + F_{2x}$

$R_y = F_{1y} + F_{2y}$



$R_x = F_1 \cos\alpha + F_2 \cos\beta$

$R_y = F_1 \operatorname{sen}\alpha + F_2 \cos\beta$

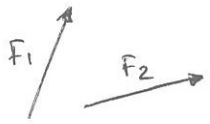
$\operatorname{tg}\gamma = \frac{R_y}{R_x}$

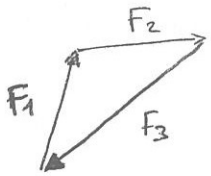
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- 2 vettori noti: trovare un terzo vettore in modo che la somma sia nulla

$R = F_1 + F_2 + F_3 = 0$

$F_3 = -(F_1 + F_2)$





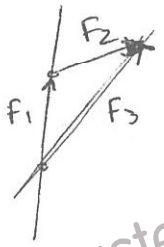
- 1 vettore e 2 direzioni note:

Unica incognita può essere l'angolo

Trovare uno dei due vettori di direzione nota in modo che sia uguale alla somma degli altri due

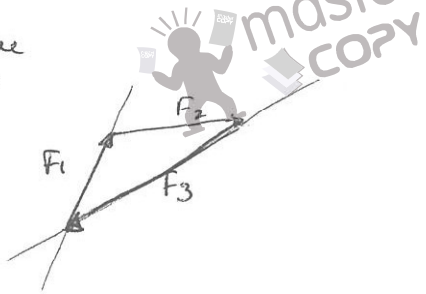
$F_3 = F_1 + F_2$





- Trovare i due vettori di direzione note in modo la somma sia nulla

$F_1 + F_2 + F_3 = 0$



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