lecture

General plan motion (GPM):

Relative analysis

a) velocity

Given V_A: velocity of a point on the body.

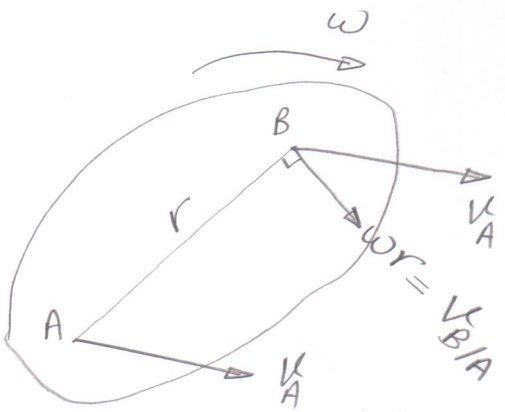
ω: angular velocity of the body.

Reqd V_B: velocity of another point on the body.

Solution:

$$\overline{V_B} = \overline{V_A} + \overline{V_{B/A}}$$

V_B: required, V_A: base, $V_{B/A}$: relative



لو لم يتم اعطاء ω, V_A يتم فرضهم

لأنه يجب إعطائي ٢

Ex. Pg 296

Ex. Pg 298

* عندما يزيد عدد الأعضاء عن واحد يتم تسميتهم Linkage أو mechanism

ويكون لكل عضو منهم ω الخاص به

every member has its own "ω"

* يجب أن يكون بكل مسألة مجهولين فقط.

lect.

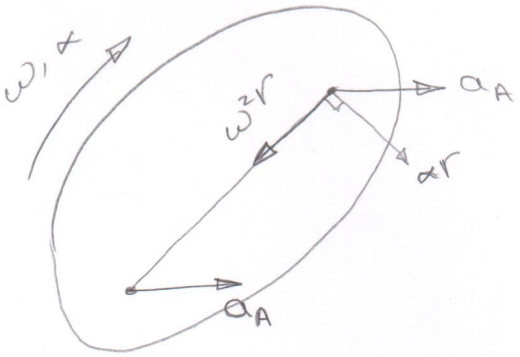
GPM. Relative analysis

b) acceleration

Given * a_A (as point A ≡ base point)

* ω

* α



Reqd a_B

$$\overline{a_B} = \overline{a_A} + \overline{a_{B/A}}$$

$\overline{a_{B/A}}$: $\omega^2 r = a_n$, $\alpha r = a_t$

* if α is not given ⟶ assume it

* if ω is not given ⟶ solve for velocities at first.

* if ω is Const. ⟶ $\alpha = 0$

Ex. Pg. 317

Ex.(8) Pg 321 ① solve for velocities

② ~ ~ acceleration

Ex.(140) Pg 327 ① solve for velocity ω_{AB}, ω_{BC}