TP1 - G40, 21 feb 2025

3

$$\boxed{\left\{\overline{v}_T(P)\right\}_B \ ?}$$

Derivant $\overline{CP}$ geomètricament

C —— R —— O —— P
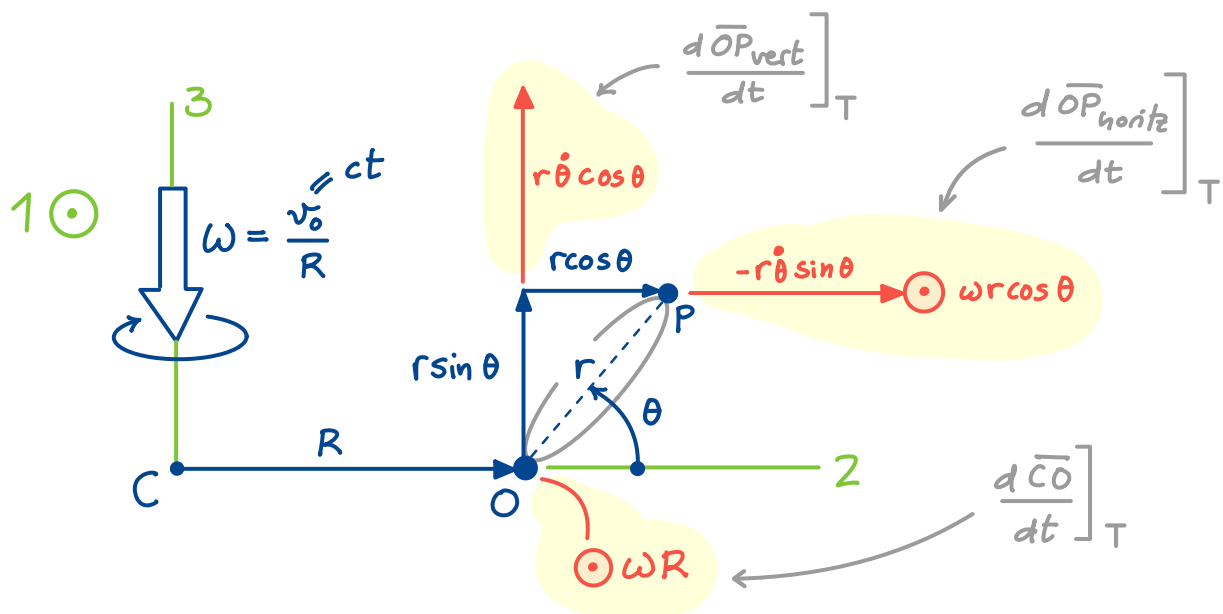
T

θ

$\dot{\theta}_0$

v_0

r

2

B = (1,2,3)

Solució:

Derivarem $\overline{CP} = \overline{CO} + \overline{OP} = \overline{CO} + \overline{OP}_{vert.} + \overline{OP}_{horitz.}$

Cal deirar els vecs. blaus, i obtenim els vermells:

$\dfrac{d\,\overline{OP}_{vert}}{dt}\bigg]_T$

$\dfrac{d\,\overline{OP}_{horitz}}{dt}\bigg]_T$

3

$1 \odot$

$\omega = \dfrac{v_o'}{R} = ct$

$r\dot{\theta}\cos\theta$

$r\cos\theta$

$-r\dot{\theta}\sin\theta$ $\odot \omega r\cos\theta$

$r\sin\theta$ r θ P

R

C

O

$\odot \omega R$

$\dfrac{d\,\overline{CO}}{dt}\bigg]_T$

2

Projectem vecs. vermells sobre $B = (1,2,3)$:

$$\left\{\overline{v}_T(P)\right\}_B = \left\{\begin{array}{c} \omega R + \omega r\cos\theta \\ -r\dot{\theta}\sin\theta \\ r\dot{\theta}\cos\theta \end{array}\right\}_B$$