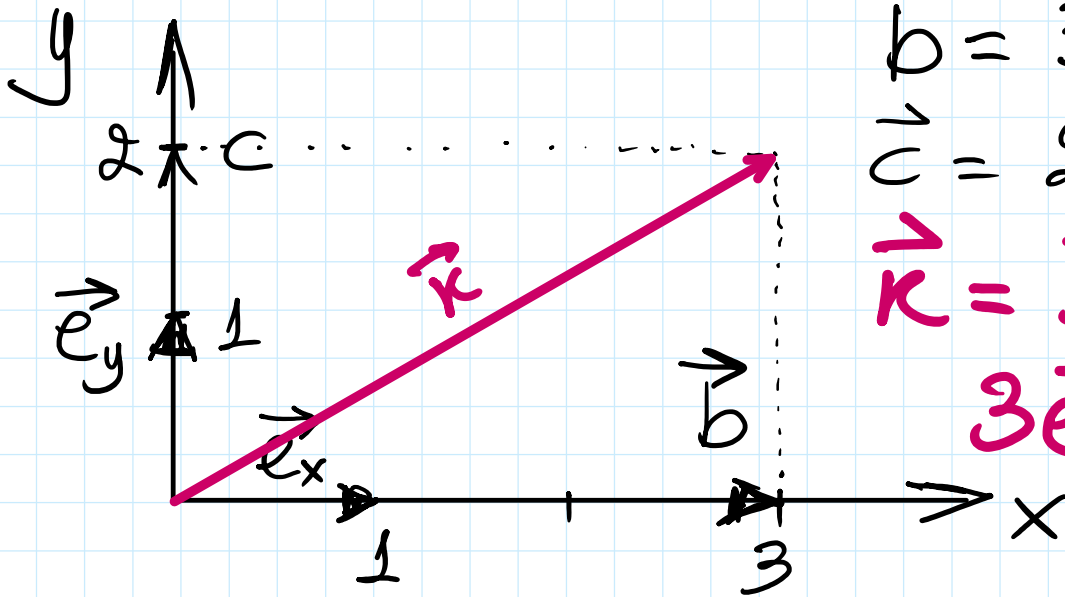


Μοναδιαία Διαστήματα

Διάστημα \vec{a} με $|\vec{a}|=1$



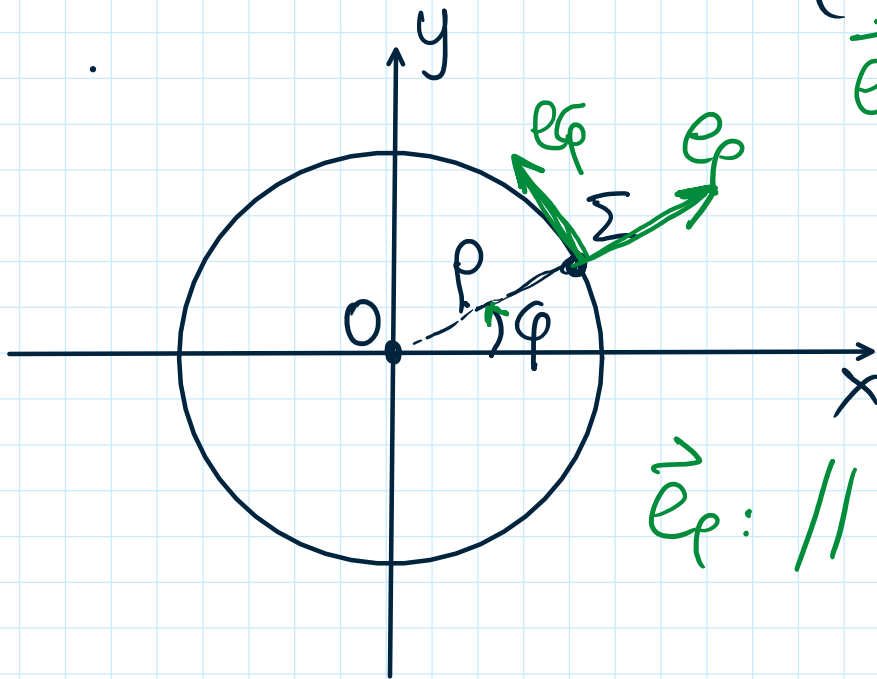
$$\vec{b} = 3 \vec{e}_x$$

$$\vec{c} = 2 \vec{e}_y$$

$$\vec{k} = \vec{b} + \vec{c} = 3\vec{e}_x + 2\vec{e}_y$$

$$\vec{k} = (3, 2) = 3\vec{e}_x + 2\vec{e}_y$$

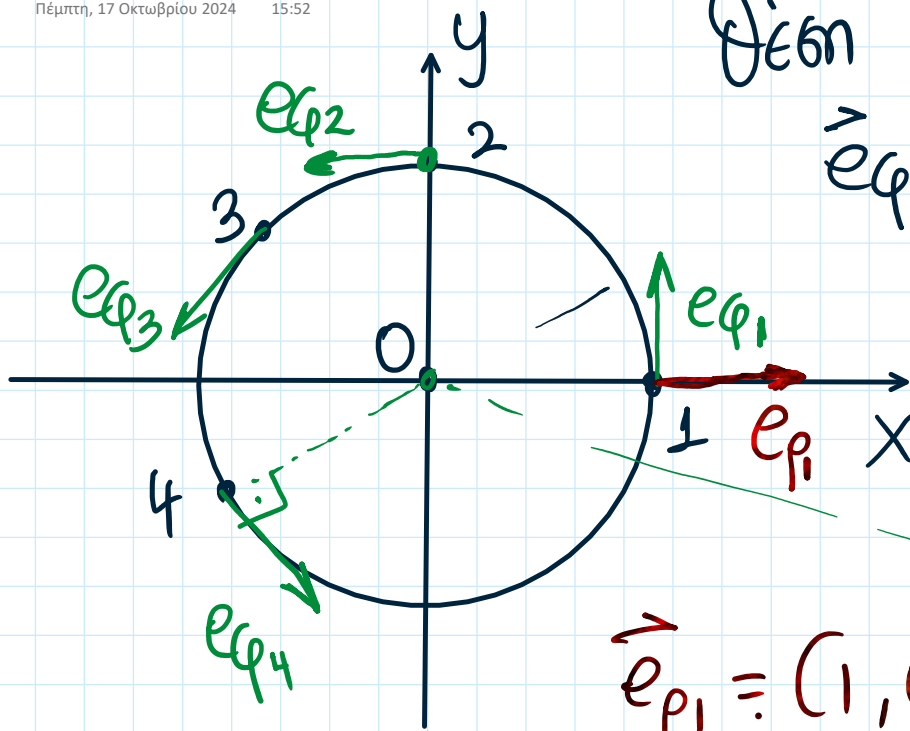
Πολικές συντεταγμένες



\vec{e}_ρ : εφαπτόμενο

$|\vec{e}_\rho| = 1$
μοναδιαίο- ρ

$\vec{e}_\rho : \parallel \rho$



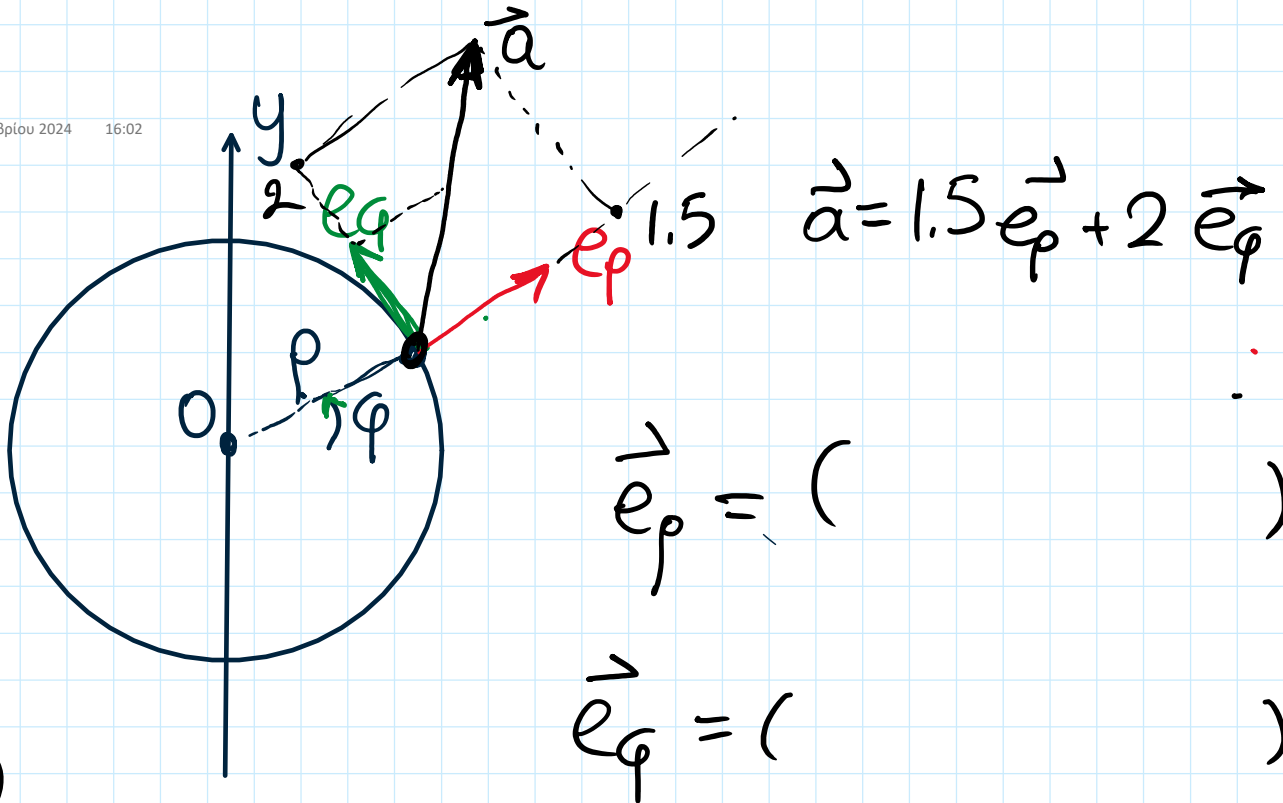
Θέση 1 μοναδιαίο

$$\vec{e}_{\varphi_1} = (0, 1)$$

↳ κατακόρυφη

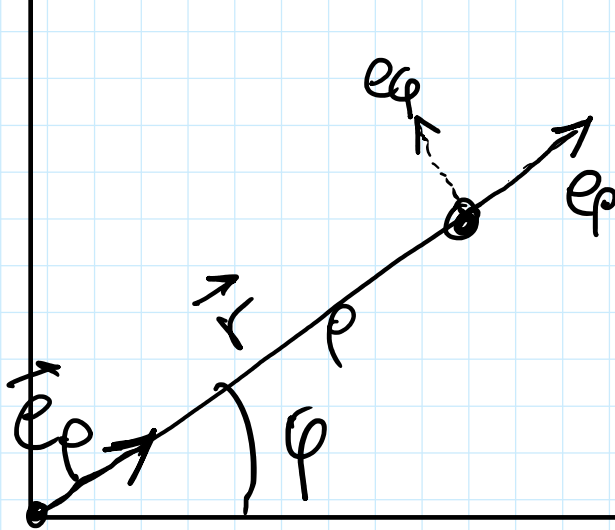
$$\vec{e}_{\rho_1} = (1, 0)$$

Ομοίως στις άλλες θέσεις
2, 3, 4, 5



①

$$\vec{r} = \rho \vec{e}_\rho$$

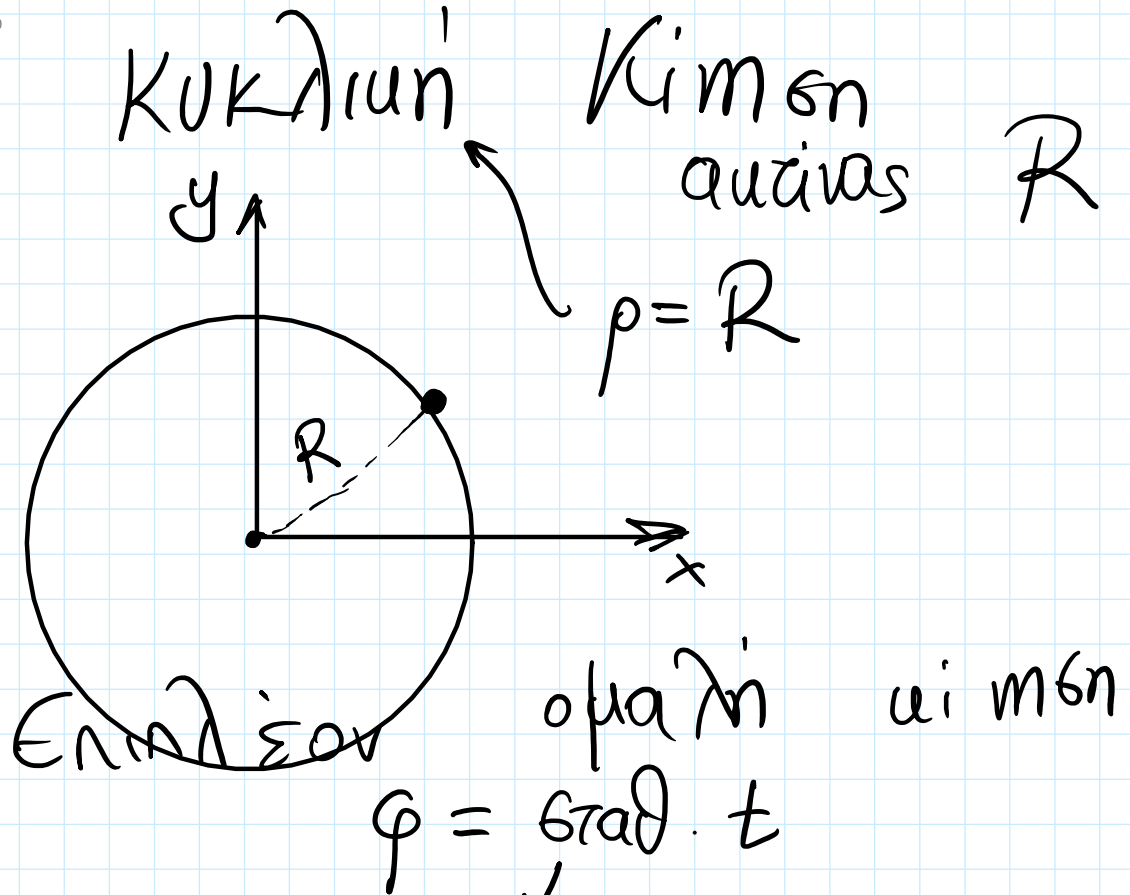


②

$$\vec{r} = (x, y) = \rho (\cos \varphi, \sin \varphi)$$

$$\vec{e}_\rho = (\cos \varphi, \sin \varphi)$$

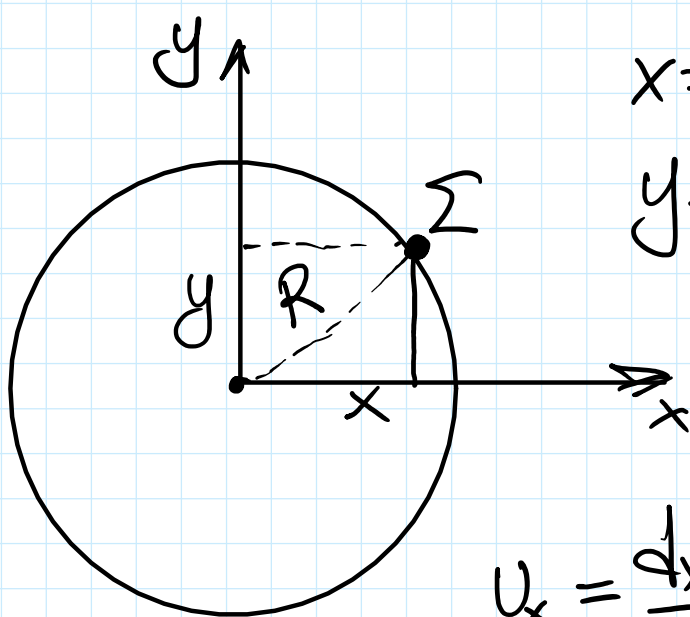
$$\vec{e}_\varphi = (-\sin \varphi, \cos \varphi)$$



Σε κάποιο σημείο Σ με συντεταγμένες

$\varphi = \omega t$
 $\rho = R$

↑
 νόρμας



$$x = R \cos \varphi = R \cos \omega t$$

$$y = R \sin \varphi = R \sin \omega t$$

2-Δ
 κίνηση

$$v_x = \frac{dx}{dt} = -\omega R \sin \omega t$$

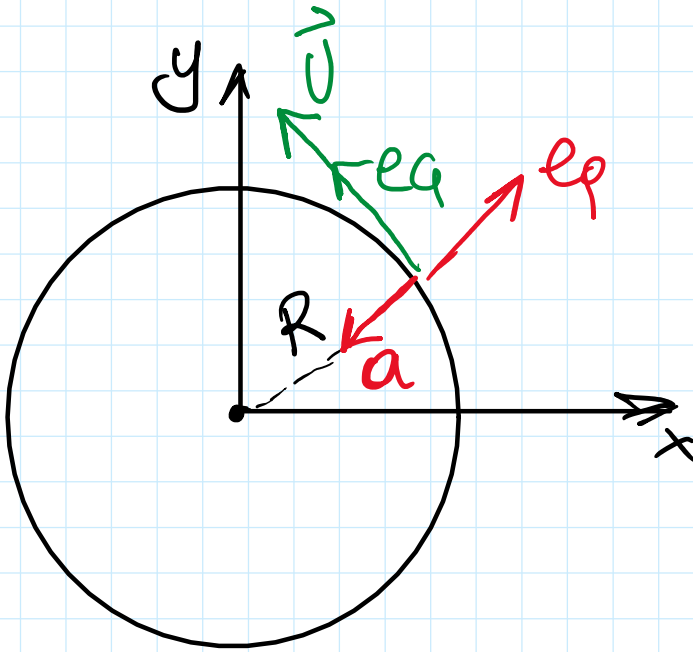
$$v_y = \frac{dy}{dt} = \omega R \cos \omega t$$

$$v_y = \frac{dy}{dt} = \omega R \cos \omega t$$

$$\vec{r} = (x, y) = R (\cos \omega t, \sin \omega t) = R \vec{e}_\rho$$

$$\vec{v} = (v_x, v_y) = \omega R (-\sin \omega t, \cos \omega t) = \omega R \vec{e}_\phi$$

$$\vec{a} = \frac{d\vec{v}}{dt} = -\omega^2 R (\cos \omega t, \sin \omega t) = -\omega^2 R \vec{e}_\rho$$



Τα διάφορα διανύσματα στην
ομαλή κυκλική κίνηση