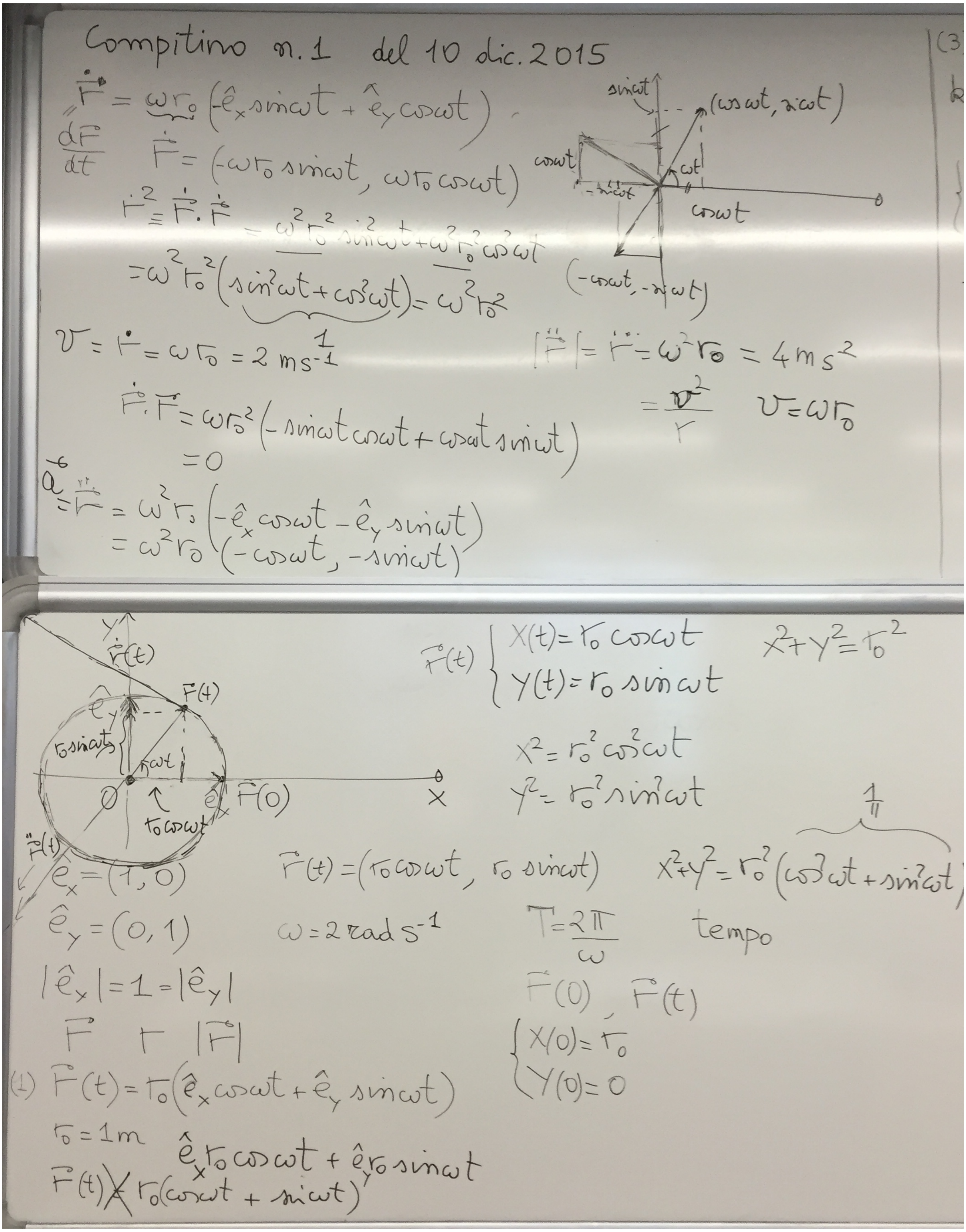
13a Lezione 17 Dicembre 2015:

- Correzione in aula del compitino
- Vedere Testo con soluzione e Risultati disponibili in rete



(3) $\vec{r}(t) = r_0 \left(k\hat{e}_x \cos\omega t + \hat{e}_y \sin\omega t\right)$

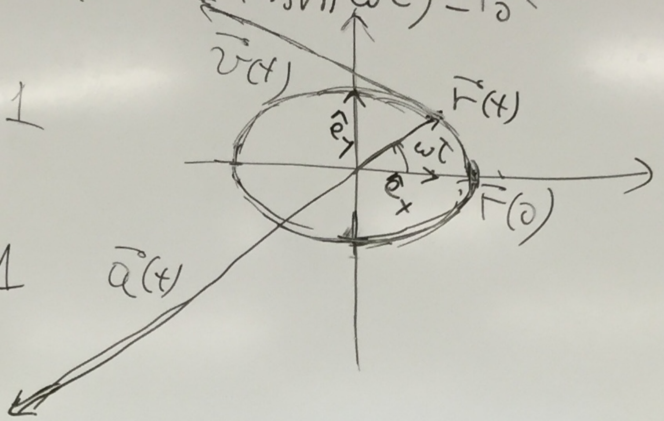
$k = 1.5$ $\quad = \left(\underbrace{r_0 k \cos\omega t}_{x}, \underbrace{r_0 \sin\omega t}_{y}\right)$

$$\begin{cases} x^2 = r_0^2 k^2 \cos^2\omega t \\ y^2 = r_0^2 \sin^2\omega t \end{cases} \qquad \begin{cases} \dfrac{x^2}{k^2} = r_0^2 \cos^2\omega t \\ y = r_0 \sin^2\omega t \end{cases}$$

$$\frac{x^2}{k^2} + y^2 = r_0^2(\cos^2\omega t + \sin^2\omega t) = r_0^2$$

$$\frac{x^2}{k^2 r_0^2} + \frac{y^2}{r_0^2} = 1$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

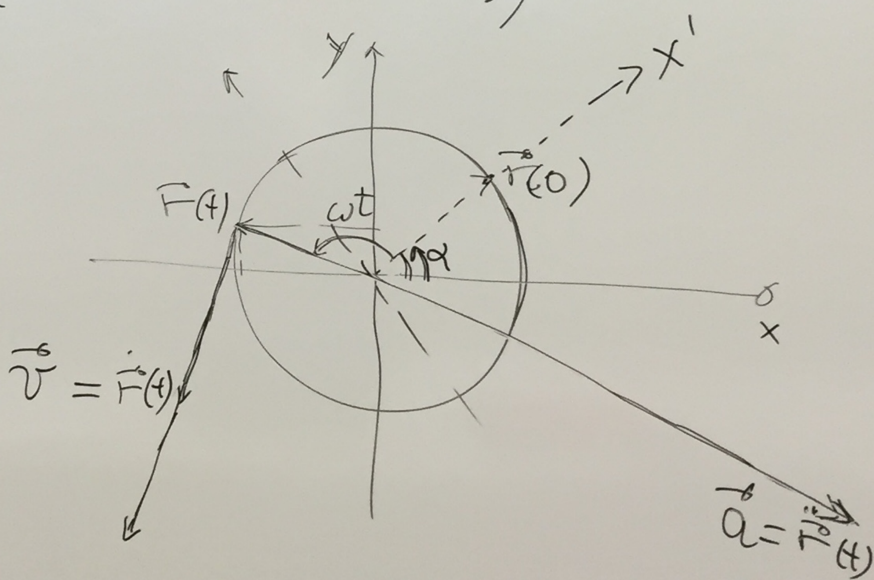


(2) $\vec{r}(t) = r_0 \left(\hat{e}_x \cos(\omega t + \alpha) + \hat{e}_y \sin(\omega t + \alpha)\right)$

$\alpha = \pi/4$

$\vec{r}(t) = r_0 \left(\cos(\omega t + \alpha), \sin(\omega t + \alpha)\right)$

$T = \dfrac{2\pi}{\omega}$



(4

$$\dot{\vec{r}}(t) = \omega r_0 \left(-k\sin\omega t, \cos\omega t\right)$$

$$\dot{\vec{r}} \cdot \dot{\vec{r}} = \omega^2 r_0^2 \left(k^2 \sin^2\omega t + \cos^2\omega t\right)$$

$$v(t) = \omega r_0 \sqrt{k^2 \sin^2\omega t + \cos^2\omega t}$$

$$\ddot{\vec{r}}(t) = \omega^2 r_0 \left(-k\cos\omega t, -\sin\omega t\right)$$

$$a(t) = \omega^2 r_0 \sqrt{k^2 \cos^2\omega t + \sin^2\omega t}$$

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(4) $\vec{r}(t) = r_0 \left(\cos(\omega t + \alpha), \sin\omega t\right)$

$$= r_0 \left(\hat{e}_x \cos(\omega t + \alpha) + \hat{e}_y \sin\omega t\right)$$

$$T = \frac{2\pi}{\omega}$$