

ESERCIZIO 5

$$r = 2 \text{ m}$$

$$s(t) = kt^2 \quad k = 2 \text{ m/s}^2$$

$$\begin{cases} a_n(t) = ? \\ a_t(t) = ? \end{cases}$$

$$v(t) = \frac{ds}{dt} = 2kt$$

$$a_t(t) = 2k \Rightarrow \boxed{4 \text{ m/s}^2}$$

$$a_n(t) = \frac{v^2(t)}{r} = \frac{4k^2 t^2}{r} \Rightarrow \boxed{8t^2 \text{ m/s}^2}$$

ESERCIZIO 6

$$\begin{cases} x = k_1 - k_2 \cos \omega t \\ y = k_3 + k_4 \sin \omega t \end{cases}$$

$$k_1 = 2 \text{ m} \quad k_2 = 3 \text{ m}$$

$$\omega = 10 \text{ s}^{-1}$$

$$k_3 = 4 \text{ m} \quad k_4 = 5 \text{ m}$$

$$\begin{cases} -\cos \omega t = \frac{x - k_1}{k_2} \\ \sin \omega t = \frac{y - k_3}{k_4} \end{cases}$$

$$\Rightarrow \boxed{\left(\frac{x - k_1}{k_2}\right)^2 + \left(\frac{y - k_3}{k_4}\right)^2 = 1}$$