

EJERCICIO 3º DE VECTORES

$$\vec{r}(t) = 2t \cdot \vec{i} + t^2 \cdot \vec{j} \quad (\text{en metros})$$

$$\begin{array}{l} a) \\ \vec{r}(t=0s) = 2 \cdot 0 \cdot \vec{i} + 0^2 \cdot \vec{j} = 0 \cdot \vec{i} + 0 \cdot \vec{j} = 0 \\ \vec{r}(t=5s) = 2 \cdot 5 \cdot \vec{i} + 5^2 \cdot \vec{j} = 10 \vec{i} + 25 \vec{j} \end{array} \left. \vphantom{\begin{array}{l} a) \\ \vec{r}(t=0s) = 2 \cdot 0 \cdot \vec{i} + 0^2 \cdot \vec{j} = 0 \cdot \vec{i} + 0 \cdot \vec{j} = 0 \\ \vec{r}(t=5s) = 2 \cdot 5 \cdot \vec{i} + 5^2 \cdot \vec{j} = 10 \vec{i} + 25 \vec{j} \end{array}} \right\} \Delta \vec{r} = \vec{r}_2 - \vec{r}_1$$

$$\Delta \vec{r} = (10 \vec{i} + 25 \vec{j}) - (0 \vec{i} + 0 \vec{j}) = 10 \vec{i} + 25 \vec{j}$$

$$\vec{v}_m = \frac{\Delta \vec{r}}{\Delta t} = \frac{(10 \vec{i} + 25 \vec{j}) \text{ m}}{(5s - 0s)} = \left[\frac{10 \vec{i}}{5} + \frac{25 \vec{j}}{5} \right] \frac{\text{m}}{\text{s}}$$

$$\vec{v}_m = (2 \vec{i} + 5 \vec{j}) \text{ m/s}$$

$$b) \quad |\vec{v}_m| = \sqrt{[(2 \vec{i})^2 + (5 \vec{j})^2]} \left(\frac{\text{m}}{\text{s}} \right)^2 \stackrel{*}{=} \sqrt{2^2 + 5^2} \quad \frac{\text{m}}{\text{s}}$$

$$|\vec{v}_m| = \sqrt{29} \text{ m/s} = 5.38 \text{ m/s} \approx 5.4 \text{ m/s}$$

* El módulo de los vectores unitarios es la unidad $\Rightarrow \sqrt{\vec{i}^2} = 1, \sqrt{\vec{j}^2} = 1$