

α) Είναι:

$$\begin{aligned}0 < \alpha < 1 &\stackrel{\alpha^2 > 0}{\iff} \\ \iff \alpha \cdot \alpha^2 < 1 \cdot \alpha^2 &\iff \\ \iff \alpha^3 < \alpha^2\end{aligned}$$

β) Ισχύει ότι:

- $0 < \alpha \iff 0 < \alpha^3$,
- $0 < \alpha < 1 \iff 0 < \alpha^3 < \alpha$
- $\alpha < 1 \iff \alpha^3 < 1^3 \iff \alpha^3 < 1$,
- $0 < \alpha < 1 \iff \frac{1}{\alpha} > 1$

Τελικά:

$$0 < \alpha^3 < \alpha < 1 < \frac{1}{\alpha}$$