

⑧  $X$  sempl connesso,  $A \subseteq X$  retratto  $\Rightarrow A$  sempl connesso

$$A \subseteq X \text{ retratto} \Leftrightarrow \exists r: X \rightarrow A, r \in C(X, A) \mid r \circ i = \text{id}_A$$

$$r \text{ suriettiva} \Rightarrow r(X) = A$$

$$\left. \begin{array}{l} X \text{ sempl conn} \Rightarrow X \text{ cpa} \\ r \text{ continua} \end{array} \right\} \Rightarrow r(X) = A \text{ cpa}$$

$$X \text{ sempl conn} \Rightarrow \pi_1(X) \cong \{e\}$$

$$X \text{ sempl conn} \Rightarrow X \text{ cpa} \stackrel{\text{cor 2.2.3}}{\Rightarrow} \pi_1(X, x) \cong \pi_1(X, y), \forall x, y \in X \Rightarrow \pi_1(A) \cong \{e\}$$

$$\left. \begin{array}{l} A \text{ cpa} \\ \pi_1(A) \cong \{e\} \end{array} \right\} \Rightarrow A \text{ sempl connesso}$$