Let $p: X \to Y$ be an open map. Show that if A is open in X then the map $q: A \to p(A)$ by restricting p is an open map.

Since A is open $p(A)$ is open in Y

let F be open in A. then $F = A \cap U$.

U open in X. Then F is open in $p(X)$ as it is the intersection of 2 opensets.

Then $p(F)$ is open in $p(X)$

but $p(F) = p(F) \cap p(A)$ so $q(F)$ so

q is open.