math 464
Third Homework
Due Date Saturday 1/ 8 / 1437, at 11:55 Pm.

Name: **Number:**

Always try to justify your answer (SHORT PROOF).

Q1: Let $f : X \to Y$ be a continuous surjective map and $g \circ f$ is open. Show that $g : Y \to Z$ is open.

Q2: Let $f : X \to Y$ be a continuous open map, and $A \subseteq X$. Prove that $f(int(A)) \subseteq int(f(A))$.

Q3: Prove or disprove:

(a) All injective functions are continuous.

(b) $f : X \to Y$ is a homeomorphism iff : $f^{-1} : Y \to X$ is a homeomorphism.

Good Luck :)