Spring 2015, QUIZ 3, MATH-201, NAME: Score.....

You have to show your work and write down your proof.

1: Negate the following formula and write it in prenex normal form

$$(\forall z \exists q R(z,q)) \Rightarrow (\exists z \forall q R(z,q))$$

2: Prove that $\sqrt{5}$ is irrational number.

3: Let p, q, r be real numbers with $0 \leq p, q, r \leq 1$, and with $p(1-q) > \frac{1}{4}$ and $q(1-r) > \frac{1}{4}$. Prove that

$$r(1-p) < \frac{1}{4}.$$