Exam I

1. Prove that there is no largest negative rational number.
2. Prove that if x and y are positive real numbers, then $\sqrt{x+y} \neq \sqrt{x} + \sqrt{y}$.
3. Prove that n is even if and only if $n^2 + 1$ is odd.
4. Give 2 examples of implications, and for each write down their contrapositive. Have one to be real-world example, and the other to be a math example.
5. Are there infinitely many composite numbers? Prove your answer.