In the following, please simplify any negations.

1. Write the negation of each of the following:
   a) There exists an integer $n$ such that if $n$ is a multiple of 3, then $n^2$ is a multiple of 9.
   b) For all real numbers $x$, if $x < 0$ then $\sqrt{x}$ is not a real number.

2. Write the negation and contrapositive of each of the following:
   a) If $n$ and $m$ are even, then $n + m$ is even.
   b) $P \Rightarrow (Q \land \neg R)$.

3. Extra credit (Due Thursday, Sept. 8).
   a) Prove that $\sqrt{3}$ is irrational using the same technique as in class.
   b) Does the proof from class work for $\sqrt{5}$? If not, explain which step fails.