homework 7 4.6

3) Use proof by contradiction to show that for all INT n, $3n+2 \nmid 3$
Suppose not; there is an INT such that $3n+2 \div$ by 3. By def of divisibility, $3n+2 = 3k$ for some INT k. Subtracting $3n$ from both sides gives that $2 = 3k - 3n = 3(k-n) = 3 \leq 2 \neq 3 > 2$

5) Formulate negation; prove by contradiction
There is a greatest ever int, N
N is even $\forall N \geq N$ for every INT N
Let $m = N+2$ then m is an even INT
Since it has the sum of two INT, even
$m > m$ since $m = N+2$

19) Prove by contraposition
Suppose r and s are positive real numbers, $r \leq 10$ and $s \leq 10$, $rs \leq 100$