MATH 3790 - Homework Set 1

Not to be handed in

September 17, 2003

1. Prove that $\log_2 3$ is irrational.
2. Prove that $7|2^{3n} - 1$.
3. Find a closed form expression for the sum $1 + 3 + 5 + ... + (2n - 1)$ and prove that it is correct.
4. Prove that if a, b, c are integers and $a|b$, $b|c$ then $a|c$.
5. Prove that there are infinitely many primes.