HW1

This is due Friday Feb. 8

1. a) Prove that if n is odd, $n^2 - 1$ is divisible by 8.

   b) Prove that $4 \nmid n^2 + 2$ for any integer n.

2. Using method of mathematical induction show that $\sum_{i=1}^{k} 3i^2 - 3i + 1 = k^3$

3. Find parametrisation of the rational points on the hyperbola $x^2 - 2y^2 = 1$, starting from the point $(3, 2)$.

4. Prove that any positive integer of the form $3k + 2$ has a prime factor of the same form