## **Examlet 1A** Foundations of Advanced Math 2/7/13

1. Show that the square of a throdd integer is throdd.

2. Determine whether  $(P \to Q) \land (P \to R)$  is logically equivalent to  $P \to (Q \land R)$ .

3. a) If  $a =_n b$ , then  $a + 2 =_n b + 2$ .

b) If  $a \equiv_n b$ , then  $2a \equiv_n 2b$ .

4.  $\sqrt{2}$  is irrational.

5. For all  $n \in \mathbb{N}$ ,  $3 | (n^3 - n)$ .