

Examlet 1 Foundations of Advanced Math 2/1/07

1. a) State the definition of an irrational number.

b) Write the truth table for $P \Rightarrow Q$.

2. Determine whether the propositionals $P \Rightarrow (Q \vee R)$ and $(P \Rightarrow Q) \vee (P \Rightarrow R)$ are equivalent.

3. Prove that for integers m and n , $m \cdot n$ is odd if and only if both m and n are odd.

4. Prove that $\sqrt{3}$ is irrational.

5. Prove that $\sum_{r=1}^n 2^r = 2^{n+1} - 2$.