

Analysis Homework 1

- ① Prove the second statement of Prop. 1.1.3 in the Intermediate Real Analysis (IRA) text at <http://www.maths.org/analysis/real>
- ② Prove the second of the De Morgan Laws (Thm 1.14)
- ③ True or false: "if x^2 is divisible by 3, then x is divisible by 3". If false, give a counterexample. If true, prove it.
- ④ If x_1, x_2, x_3, \dots are prime numbers (in order) then is $x = x_1 \cdot x_2 \cdot x_3 \cdot \dots \cdot x_n + 1$ prime? For example $x = 2 \cdot 3 \cdot 5 + 1 = 31$ is prime. Give an example to show this is not always so.