

Course 2BA1: Michaelmas Term 2003.

Assignment I.

To be handed in by Friday 7th November, 2003.

Please include both name and student number on any work handed in.

1. Prove by induction on n that

$$\sum_{i=1}^n \frac{2i+1}{i^2(i+1)^2} = \frac{n^2+2n}{(n+1)^2}.$$

2. Prove by induction on n that $(3n)! \geq \frac{1}{20} \times 120^n$ for all natural numbers n (where $n!$ denotes the product of all natural numbers from 1 to n inclusive).