

Course 2BA1: Michaelmas Term 2001.

Assignment I.

To be handed in by Friday 2nd November, 2001.
Please include both name and student number on any work
handed in.

1. Prove by induction on n that

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

for all natural numbers n , where

$$\sum_{i=1}^n \frac{1}{i(i+1)} = \frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \cdots + \frac{1}{n(n+1)}.$$

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