

UPDATED GENERAL INFORMATION — NOVEMBER 22, 2017

The third quiz

The first quiz will take place in the discussion sections on Tuesday, November 28. It will consist of one problem at the level of recommended homework assignments, and only use up part of the period(s). The question will be about the material in Section V.2. Different discussion sections will probably have different questions, but the intent is for them all to be no more difficult than the level of the practice problems are given below. Recall that

$$\sum_{k=1}^n a_k$$

means the sum of all terms of the form a_k from $k = 1$ to $k = n$. Similarly,

$$\prod_{k=1}^n a_k$$

means the product of all terms of the form a_k from $k = 1$ to $k = n$.

1. Prove the following identity by finite induction:

$$\sum_{k=1}^n \frac{2}{k(k+2)} = \frac{3}{2} - \frac{2n+3}{(n+1)(n+2)}$$

2. Prove the following identity by finite induction:

$$\prod_{k=1}^n \frac{k}{k+1} = \frac{1}{n+1}$$

3. Prove the following identity by finite induction:

$$\sum_{k=1}^n \frac{k}{2^k} = 2 - \frac{n+2}{2^n}$$

4. Prove the following identity by finite induction:

$$\prod_{k=1}^n 4k - 2 = \frac{(2n)!}{n!}$$