

General Mathematics and Computational Science I

Exercise 4

September 26, 2006

1. (From Ivanov, p. 8) Prove that any sum of more than 7 cents can be made up out of 3- and 5-cent coins.

(Use the induction principle formulated in class!)

2. Using mathematical induction, prove that for all $n > 1$ the following inequality holds:

$$\frac{1}{2^2} + \frac{1}{3^2} + \dots + \frac{1}{n^2} < 1 \quad (1)$$

Hint: Prove that the sum on the left is less than or equal to $1 - \frac{1}{n}$. (A similar problem can be found in Ivanov, p. 9, Problem 7.)