

General Mathematics and Computational Science I

Exercise 11

October 31, 2006

1. Prove the *arithmetic-geometric-mean inequality* for $n = 3$.

Note: This is Problem 9 from Ivanov, p. 48, which contains a sketch of a proof. The task here is to write out a complete self-contained solution without reference to Ivanov.

2. Show that

$$a^2 + b^2 + c^2 \geq ab + bc + ca$$

for arbitrary real numbers a, b and c . When does equality hold?