

## Financial Mathematics 1 - Spring term 2015

**Exercise sheet no.3 (26.3.2015)****Exercise 1:**

- (i) Show that  $\Gamma$  as defined on page 13 of the Finance part of the lecture is convex.
- (ii) Show that  $K$  as defined on page 15 of the Finance part of the lecture is convex and compact.

**Exercise 2:** (For this exercise you may use a calculator) If one invests 100\$ at an annual compounding rate of 5% one obtains after one year 105\$. In other words the annual return rate (or effective interest rate) is 5%.

- Calculate the annual return rate in case of monthly, daily, and continuous compounding when the annual compounding rate is 5%.
- What is the final balance in case of monthly, daily, and continuous compounding, if one invests 100\$ at a rate of 5% over two years, five years.
- For which continuously compounded rate  $r$  do one obtains the same final balance after one year, as with yearly, monthly, daily compounding with annual compounding rate of 5%.

**Please drop the solutions into the homework box for the lecture at the basement of building no. 25 until 2.4.2015, 6 pm**