The Dragon Academy G11 Functions and Applications Term 4 Assignment 3 Due date: Tue. 14 May 2019

May 10, 2019

1 Problems

See our textbook, on **page 488**, **exercises** 12, 13, 14 **and** 15. Follow the example below to understand the usual notation on interest rates.

2 Remark

Financial institutions usually refers interest rates as a value per year. For instance, 4%/a compounded monthly. This means that each month the bank will apply an *interest rate* of 4/12 = 3.33%.

2.1 Example

Problem: Let's say we used our credit card spending \$1000 and do not pay it back on time. The bank will then start charging an interest. For instance, CIBC has an annual interest rate of 19.99%/a. The interest is, however, compounded daily. What will we have to pay if we settle our outstanding 15 days after the missed initial deadline?

Answer: The formula is $A(d) = P (1 + i)^d$, where d is the days passed after the deadline, P is the principal, i.e., the amount withdrawn as a credit, and i is the daily interest rate, which is $i = 19.99/365 \sim 0.0548 = 5.48\%$. Hence

$$A(15) = 1000 \cdot (1 + 0.0548)^{15} = 2226.14$$

2.2 Take-Home-Message

Pay attention to the expression /a when talking about interests. You will still need to adjust that value according to the compounding period!

3 Problem statements

