Financial Mathematics (BUS2016H)

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Instructions

- This sheet is compiled from past material with minor adjustments and mainly for your own practice.
- Your workings are very important and earn part marks in excel assessments.
- Label columns and make sure your work is understandable.
- Aim to learn more than you already know.
- **Note:** The mark allocations in this sheet are not a true reflection of the actual marking standard.

Good luck and do your best! Remember, the goal is to test your own understanding and identify areas that need revision.

Questions

Q1 Miguel deposits R1000 into a fund annually and doubles the annual contribution fifteen years later. All contributions are in arrears.
Interest is credited at a nominal discount rate of d compounded quarterly for the first 10 years, and at a nominal interest rate of 6% compounded semi-annually for next 16 years, and at a force of interest of 7% per annum thereafter.
The accumulated balance in the fund at the end of 30 years is R80000

Calculate d.

Hint: Try GoalSeek [**4**]

Q2 Nisreen, Janice, and Boipelo are interested in pooling together R30000 to invest into a fund, however they are undecided on whose suggested fund to use.

- Nisreen suggests investing the R30000 in an upcoming project that pays back R10000 every 3 years, (until the principal investment is returned) at an interest rate of 3% per annum effective.
- Janice found a fixed interest security that pays out annual payments of R2000 over 10 years with a R10000 repayment at the end. For the price of R30000, an effective compound rate of interest charge of 0.9% per month is due.
- Boipelo knows a "reliable" investor that guarantees quartely payments for 5 years in exchange for the R30000. The payments are R500 for the 1st year, increasing by R500 each year, at an interest rate of 2% per annum effective.

Calculate the present value of each scenario and help them by giving them their best option (based *solely* on the present values!!!).

[**6**]