8A – Compound interest investments with regular additions to the principal

**RECURRENCE RELATIONS COMBINING GEOMETRIC AND ARITHMETIC PARTS**

If you add a regular amount to your compound interest investment (each compounding period), the recurrence relation becomes:

The value of R can still be calculated using:

… where p is the number of compounding periods per year

And **D is the regular amount added** to the investment each compounding period.

*You decide to invest $1200 at 6% per annum, compounding monthly. In addition you will contribute an extra $100 out of your pay each month.*

1. *Determine the value of both R and D*
2. *Write the recurrence relation for your investment*
3. *Use NestList to calculate the value of your investment each month for 6 months:*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| V0 | V1 | V2 | V3 | V4 | V5 | V6 |
|  |  |  |  |  |  |  |

1. *By changing the number of iterations, find out how many months it will take for your investment value to exceed $3000. State the term number and the value of the investment:*

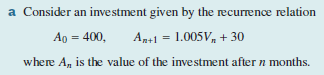
8A – Compound interest investments with additions to the principal

**FINDING THE ANNUAL INTEREST RATE FROM THE RECURRENCE RELATION**

If you know the recurrence relation for a compound interest investment (with or without a regular payment), the annual interest rate can be calculated:

… where p is the number of compounding periods per year

*Determine the annual interest rate for each of the following investments:*



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