

FINANCE MATHS - ~~1000~~ WORKSHEET 2

Exercise 11.3

- 1 Use the formula $S_n = \frac{MR(R^n - 1)}{R - 1}$ to calculate the total superannuation from contributions of
- a) \$2000 yearly at 9% p.a. for 20 years b) \$800 quarterly at 12% p.a. for 25 years
c) \$200 bi-monthly at 15% p.a. for 30 years d) \$200 monthly at 15% p.a. for 30 years
e) \$60 weekly at 8.5% p.a. for 40 years f) \$100 fortnightly at 10% p.a. for 30 years
- 2 John and Sally were married recently and wanted to buy a house around \$80000. They planned to save for five years for a good deposit for one of those houses.
- a) If they can deposit \$400 per month to an account paying 15% p.a., how much can they withdraw in 5 years ?
b) If inflation for the five years is 8% p.a., how much is the value of the house, hence, calculate how much extra they still need to make an equivalent deposit for the house ?
- 3 Bob and Jane set up a sinking fund for their first new-born son with quarterly payments of \$100 each with a banking company that pays 12% p.a. compounding quarterly until the son's 21st birthday. How much will this investment accumulate to ? (Notice that the last payment is made on the son's 21st birthday, thus earns no interest)
- 4 On 30th June 1991 Jane invested \$2000 into a superannuation account that pays 10% p.a.. If she continues to put in \$2000 on 30th June every year for 40 years, how much can she withdraw on 1st July 2030 ?
- 5 Aneta plans to deposit \$100 per month into a superannuation fund which pays 10% p.a. interest, compounded monthly. How many years will it take to reach \$100 000?
- 6 Alice has made regular annual payments of \$1200 into a superannuation fund for the last 10 years, but she is no longer able to continue her contribution. She decides not to withdraw the fund until she retires in five years' time. How much will her superannuation be worth on her retirement, noting that she will not make any deposits for this year neither for the next five years ? You may assume that interest is paid at the rate of 12% .
- 7 Vince has put \$120 each month in his superannuation account at Reliable Insurance Company for the last 80 months. He was recently told that the company cannot continue to pay 12% p.a., it would reduce the interest rate to 9.5% which is effective immediately. If Vince continues his contribution for another 20 months, how much will his contribution worth?
- 8 Mr Brown joined First Class superannuation fund five years ago by making annual payments of 10% of his salary. If his salary was \$23500 when he joined the fund, and increased by 5% every year, what is the current value of his superannuation, assuming the interest rate is 8.5% p.a. ?
- 9 Determine the amount that should be deposited at the beginning of each year for 4 years in an account paying 12% p.a. so that the total value after 4 years is \$10000.
- 10 a) ABC company needs \$20000 in 5 years to replace its computers. What fixed monthly payments must be made in order to meet the cost, if the current interest rate is 8% p.a., interest compounding monthly?
b) Repeat the question if the company wants to make quarterly payments. Assume that the bank continues to pay 8% p.a. interest compounding monthly.
- 11 Refer to question 10. After the ABC company has made 12 deposits of \$270.39 each the bank increases the interest rate to 15% p.a. If the company reduces its payments so that it will receive \$20000 in 4 more years, how much should each of its remaining payments be ?
- 12 a) Evaluate
 $100(1.01)^{120} + 110(1.01)^{119} + 120(1.01)^{118} + \dots + 1200(1.01)$
b) John has become full-time employed. He plans to open a superannuation account by initially depositing \$100 and increasing by \$10 every following month for 10 years. Assume interest is 10% p.a. calculate the amount withdrawable after 10 years.