Test Run

CEM – Yr 12 – Arithmetic and Geometric sequences and series, Finance math's- Superannuation and time payments – MC – Paper 1

1) 2) One infinite geometric series has a first term of 3 and common ratio of r. Another has a first term of 5 and a common ratio of r^2. If they have the same limiting sum, find the value of r.

a) $\frac{2}{3}, 1$ b) $\frac{3}{4}, 5$

c) $1\frac{1}{2}, \frac{4}{5}$ d)6, 3

3) ~~2)~~ An arithmetic series has a first term of 1 and a last term of 5. The sum of its terms is 6 times the last term. Find the number of terms in the series

a) 8 b) 14

c) 10 d) 6

4) ~~3)~~ Evaluate w for the limiting sum $5+5w^2+5w^4+\ldots=\frac{49}{8}$

a) $w=\pm\frac{2}{5}$ b) $w=\pm\frac{9}{49}$

c) $w=\pm\frac{3}{7}$ d) $w=\pm\frac{1}{5}$

1) ~~4)~~ Find an expression for the nth term of the series 2+7+12…

a) $3n+4$ b) $4n+1$

c) $6n-5$ d) $5n-3$

5) At the end of 2010, home loan rates increased by 0.4%. The monthly repayment is now $3514. What was the original repayment?

a) $2417 b) $3500

c) $1893 d) $3410

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6) The third term of an arithmetic series is 32 and the sixth term is 17. Find the sum of the first ten terms

a) 219 b) 128

c) 94 d) 195

7) The first 4 terms of a geometric series are 3+9+27+81… How many terms of the series will give a sum of 21 523 359

a) 15 b) 31

c) 42 d)24

8) Kelly is going to deposit \$205 000 in an account which will pay her interest of 1% each month. Immediately after each interest payment she will withdraw \$W. If she wishes to this for a total period of 10 years, find, to the nearest \$1, the maximum amount she can withdraw

a) \$4713 b) \$8673

c) \$2941 d) \$1876

9) Byron borrows \$10 000 and agrees to repay the loan in equal monthly installments over 5 years. Interest is charged at 12% per annum on money owing. If A_n represents the amount of money owing after n months and R is the monthly repayments, calculate the amount of the monthly installments R to the nearest cent.

a) \$222.44 b) \$547.62

c) \$876.15 d) \$312.94

10) A business owner borrows \$100 000 to pay for renovations. The interest is calculated monthly at the rate of 2% per month, and is compounded each month. The business man intends to repay the loan with interest in two annual installments \$$M$ at the end of the first and second years. What is the total interest over the two year period?

a) \$73 832.23 b) \$41 822.38

c) \$36 837.63 d) \$29 736.83

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Answers

1. a)
2. c)
3. c)
4. d)
5. b)
6. d)
7. a)
8. c)
9. a)
10. b)