adamjee maths

A-LEVEL MATHS / EDEXCEL / FREE RESOURCES

Geometric sequences and series

Question paper

2 questions

Exam questions and marking instructions remain credited to their board.

Contents

1 June 2024 - Paper 1 - Q9

2 October 2021 - Paper 1 - Q5

9. The first 3 terms of a geometric sequence are

$$3^{4k-5} \qquad 9^{7-2k} \qquad 3^{2(k-1)}$$

where k is a constant.

(a) Using algebra and making your reasoning clear, prove that $k = \frac{5}{2}$

(3)

(b) Hence find the sum to infinity of the geometric sequence.

(3)

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Question 9 continued

(Total for Question 9 is 6 marks)

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5. **In this question you should show all stages of your working.**

Solutions relying entirely on calculator technology are not acceptable.

A company made a profit of £20 000 in its first year of trading, Year 1

A model for future trading predicts that the yearly profit will increase by 8% each year, so that the yearly profits will form a geometric sequence.

According to the model,

(a) show that the profit for Year 3 will be £23 328

(1)

(b) find the first year when the yearly profit will exceed £65 000

(3)

(c) find the total profit for the first 20 years of trading, giving your answer to the nearest £1000

(2)

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Question 5 continued

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