



## Self-assessment: 7 Sequences and series

1.
  - (a) Find the 15th term of an arithmetic sequence with 1st term 3 and common difference 0.7.
  - (b) Find the 10th term of a geometric sequence with 1st term 10 and common ratio 1.2.
  - (c) Find the sum of the 1st 20 terms of an arithmetic series with 1st term 1 and common difference  $-2.4$
  - (d) Find the sum to infinity of a geometric series with 1st term 21 and common ratio 0.8.

*[4 marks]*

2. The 4th term of an arithmetic sequence is 34 and the 10th term is 13. Find the 1st term and the common ratio of the sequence.

*(accessible to students on the path to grade 3 or 4) [4 marks]*

3. A geometric series has 5th term 2 and sum to infinity 72. Find the possible values of the common ratio.

*(accessible to students on the path to grade 5 or 6) [5 marks]*

**4. Do not use a calculator to answer this question.**

Given that  $x - 1$ ,  $2x + 3$  and  $x^2 - 3$  are consecutive terms of an arithmetic sequence, find the possible values of  $x$ .

*(accessible to students on the path to grade 5 or 6) [4 marks]*

5.
  - (a) Caroline opens a savings account and pays in £10 in the 1st month, £12 in the 2nd month, and in each subsequent month she pays in £2 more than in the previous month.
    - (i) How much will she pay in in the 8th month?
    - (ii) Find how much she will have paid in over the first 8 months.
    - (iii) After how many months will she first have more than £200 in her account?

*(accessible to students on the path to grade 3 or 4)*



(b) Freya opens a savings account which pays 1% interest per month, added at the end of the month. She pays in £10 at the beginning of each month.

(i) How much money will Freya have in her account after she paid in the money in the 10th month (before the interest for that month is paid in)?

(ii) In which month will she have more than £200?

*(accessible to students on the path to grade 5 or 6)*

(c) After how many months will Freya first have more money than Caroline?

*(accessible to students on the path to grade 7)*

*[14 marks]*