

Sequences & Series

(a) A pattern begins 5, 13, 21, 29, ...

The first term is 5, the second is 13, the third is 21 etc.

(i) Which term of the sequence is 813?

(ii) Eoghan has €5 in his account on January 1st. He adds €8 to the account on January 2nd, another €8 to the account on January 3rd etc. How much will he have in the account in **total** after 100 days (assuming he does not withdraw any of the money).

(b) The n th term of an exponential series is given by $T_n = 3^n$.

(i) What is the value of a , the first term of the sequence?

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(ii) What is the value of r , the common ratio?

(iii) Show that S_{10} , the sum of the first 10 terms, is $\frac{3}{2}(3^{10} - 1)$.