

SEQUENCES

Bac 2009 Créteil-Paris-Versailles

In a mountain resort, a cliff is going to be set up to create a climbing site.

Two businesses A and B have been contacted and made the following offers:

Business A: The first metre to be set up, costs 20 £, and each extra metre costs 5 £ more than the previous one.

Business B: The first metre to be set up, costs 20 £, and each extra metre costs 10 % more than the previous one.

Let u_n be the price of the n th metre to be set up and S_n be the price of the equipment of a cliff n metres high by business A.

Let v_n be the price of the n th metre to be set up and R_n be the price of the equipment of a cliff n metres high by business B.

- Give u_1, u_2, u_3 .
 - Give a recursive rule for u_n . What is the nature of the sequence u_n ? Give an explicit rule for u_n .
 - Give S_1, S_2, S_3 . Write S_n in terms of u_n . What can you say about S_n ? Write S_n in terms of n .
- Give v_1, v_2, v_3 . Round your result to the nearest pound.
 - Give a recursive rule for v_n . What is the nature of the sequence v_n ? Give an explicit rule for v_n .
 - Give R_1, R_2, R_3 . Write R_n in terms of v_n . What can you say about R_n ? Write R_n in terms of n .
- What is the price to set up a cliff 50 metres high by the two businesses? Round to the nearest pound.
- Figure out using your graphing calculator when Business A is more interesting than Business B.

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