**Graphs for Exponential Data**

Turning non-linear graphs into linear ones

[Textbook] The graph represents the growth of a population of bacteria, , over hours. The graph has a gradient of 0.6 and meets the vertical axis at as shown.

A scientist suggests that this growth can be modelled by the equation , where and are constants to be found.

1. Write down an equation for the line.
2. Using your answer to part (a) or otherwise, find the values of and , giving them to 3 sf where necessary.

Interpret the meaning of the constant in this model.





Dr Frost’s wants to predict his number of Twitter followers (@DrFrostMaths) years from the start 2015. He predicts that his followers will increase exponentially according to the model , where are constants that he wishes to find.

He records his followers at certain times. Here is the data:

**Years after 2015**: 0.7 1.3 2.2

**Followers** : 2353 3673 7162

1. Draw a table giving values of and (to 3dp).
2. A line of best fit is drawn for the data in your new table, and it happens to go through the first data point above (where ) and last (where ).
Determine the equation of this line of best fit. (The -intercept is 3.147)
3. Hence, determine the values of and in the model.
4. Estimate how many followers Dr Frost will have at the start of 2020 (when ).

Exercise 14H Pg 331-333

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