

Section 3: Modelling curves

Crucial points

1. **You should be able to convert polynomial functions into linear equations using logs**

Make sure that you can show how the relationships $y = kx^n$ and $y = ka^x$ can be written in the form $y = mx + c$ by using logarithms. (See the “Notes and Examples”).

2. **Make sure you plot the right quantities against each other**

Check the linear form of the relationship to see what you need to plot

$$y = kx^n \Rightarrow \log y = \log k + n \log x \quad \text{Plot } \log y \text{ against } \log x$$

$$y = ka^x \Rightarrow \log y = \log k + x \log a \quad \text{Plot } \log y \text{ against } x$$

3. **Remember to use inverse logs where appropriate to find the unknown constant**

Make sure you know the relationships between the unknown constants and the gradient and intercept of the graph that you have plotted.

$$y = kx^n \Rightarrow \log y = \log k + n \log x \quad \text{Gradient} = n, \text{ intercept} = \log k$$

$$y = ka^x \Rightarrow \log y = \log k + x \log a \quad \text{Gradient} = \log a, \text{ intercept} = \log k$$