Choose your families

Teacher notes

Why use this resource?

A resource offering practice in thinking about features of graphs and functions. Students decide which features of the graphs they will use to put the graphs into families. Once the graphs are sorted, students are asked to provide further examples or non-examples for each of their families. There are many ways to use ideas from calculus to sort the graphs and this resource provides opportunities to introduce and use mathematical vocabulary and relate it to behaviour of graphs. The resource also provides an opportunity to reflect on definitions such as 'increasing function' or could be used to introduce increasing and decreasing functions.

Preparation

You will need sets of the cards printed and cut out. Note that they are the same as the cards for Gradient match.

If you are using the alternative approach you could print out the example families images.

Possible approaches

Students in pairs or small groups sort the cards into families using their own decisions about the features used for sorting. Students can then supply further examples for each family.

An alternative way to introduce the problem: start by showing the image from one of the suggested ways of sorting the graphs (in the final two tabs and provided as a printable extra) and ask students what criteria they think could have been used to sort the graphs.

Key questions

- How have you chosen your families?
- Are there some graphs that belong to more than one family?
- If someone looked at your families, would they be able to identify the features you've used to classify the functions.

Possible support

If students are struggling with the open nature of the task, you could ask them to choose a pair of graphs that share a feature. Then choose another graph that does not have that feature.

Possible extension

Ask students to write down their process of sorting. How have they defined their graph features? How have they dealt with graphs that belong to more than one family? Encourage them to be precise in their use of technical language and any use of "If ..., then...".