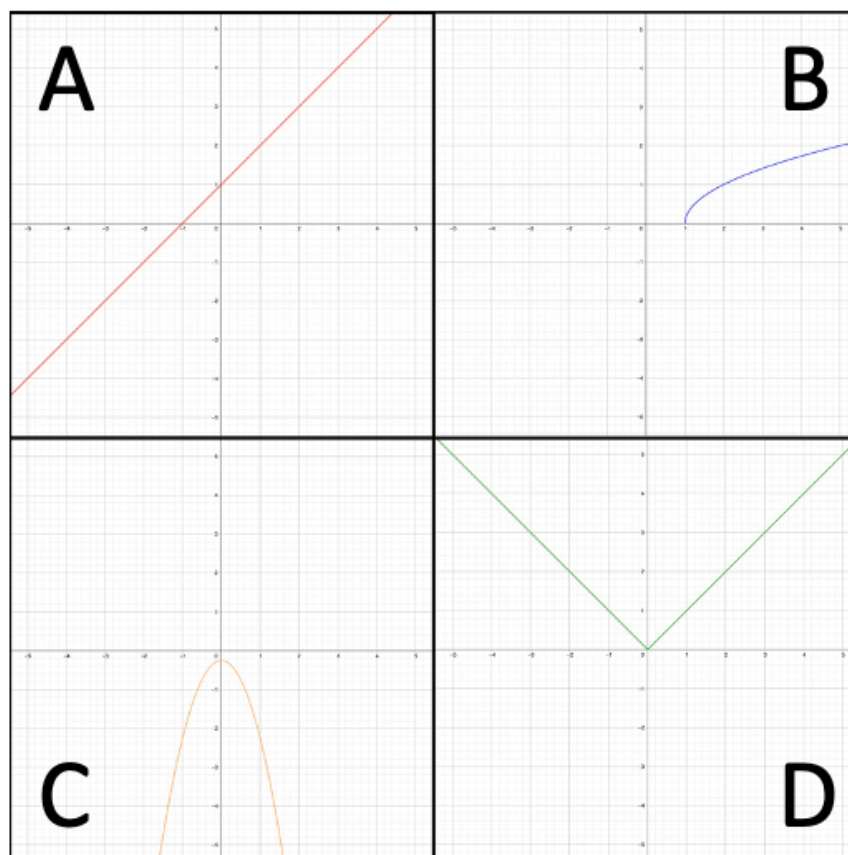




8.1 Which One Doesn't Belong?

In this task you will explore two different “Which One Doesn’t Belong Tasks” (WODB). WODB is an instructional routine that is set up with four options in which each one could be a correct response to the question WODB? The idea is for students to present arguments defending their answer using mathematical reasoning and ultimately engage in a deep discussion about the underlying mathematics related to the objects presented. In this WODB task the objects presented are representations of functions.

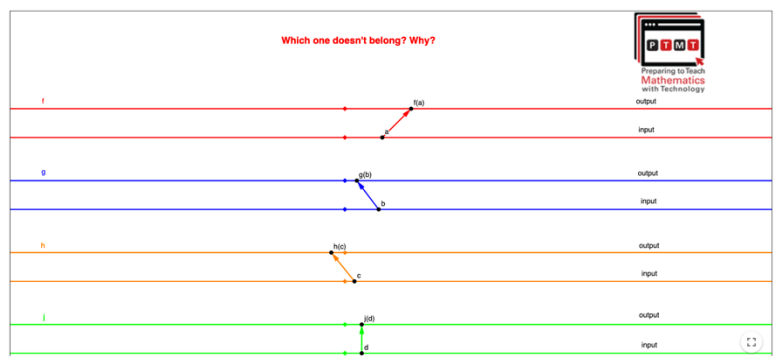
Q1. Given the four figures below, which one doesn't belong? Why?





Q2. You selected one answer for Q1. Imagine people selected each of the other options as the object that doesn't belong. For each of the other three, provide a reason that someone might say it does not belong.

Q3. Now, let's consider this dynamic WODB task. Here, rather than static Cartesian graphs, functions are represented using dynagraphs. A dynagraph is a set of two parallel number lines. The input of the function is represented on one of the number lines and the output on the other. As the input is changed (the point dragged) the output changes accordingly.



[Dynamic WODB Task](#)

Which one do you think doesn't belong? Why?



Q4. Similar to what you did for the static representation, imagine people selected each of the other options as the object that doesn't belong. For each of the other three, provide a reason that someone might say it does not belong.

Q5. Look back at the reasons you included for why each of the representations in Q1 and Q3 doesn't belong. What are the similarities and differences in the ways you reasoned about the static representations and the dynamic representations?



Q6. One of essential understandings of function is that they provide a means to describe how related quantities vary together, referred to as *rate of change* (Cooney et al., 2010). Attending to the rate of change—the way in which the output of a function changes as the input changes—is important as this is the foundation for recognizing membership to particular function families. In what ways does each of the representations of function (i.e., Cartesian graph and dynagraph) highlight aspects of rate of change?