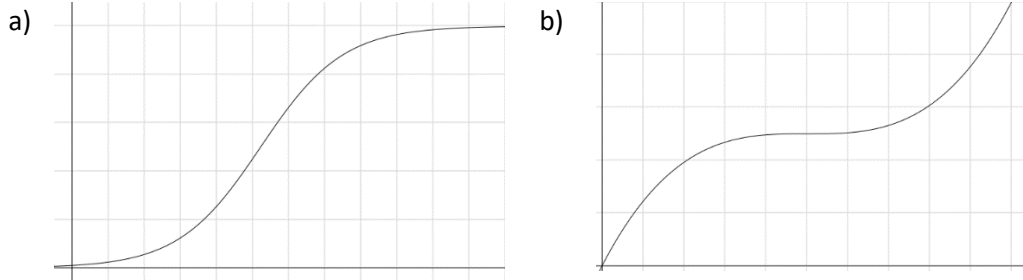


Target 1: I understand how to identify graphs from verbal descriptions

1. Jamil is jogging between his home and the park. He starts his jog slowly and then increases his speed until he is about halfway there and then decreases his speed until he reaches the park. Which graph below more accurately reflects the distance of Jamil from his house as function of time? Explain why.

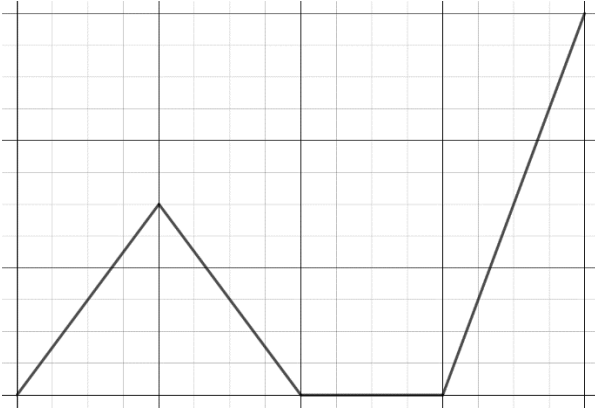


Answer: Both graphs have the rate of change initially positive, but the first graph starts slowly and increases until about halfway and then remains positive but the rate of change decreases until it eventually seems to reach zero (when he arrives at the park). The second graph has an initial rate of change that is positive and then the rate of change decreases to zero at about halfway and then increases again. So the better choice is graph a)

Target 2: I understand how to create graphs from verbal descriptions (distance time graphs)

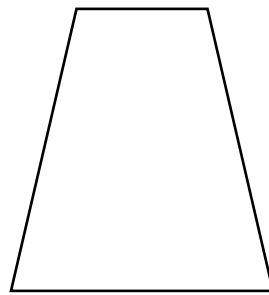
2. You leave your English class and walk towards your math class. When you are about halfway there you decide to go back to your English class and ask the professor a question. You stay at the class for a few minutes getting your question answered and then go to your math class at quicker pace (you don't want to be late). Graph the distance between you and your English classroom as a function of time, from the moment you originally leave the English classroom. Explain why you drew the graph the way you did.

Answer: there are numerous graphs that would work. Since you are modeling the distance between you and your English class and you start at your English class the graph should start at the origin and then increase until about halfway between the English and the math class. It should go back to zero (you return to your English class) and stay at zero for a bit (you remain to ask a question) Then go positively at faster rate to your Math class. Here is a possible solution:



Target 3: I understand how to create graph from physical descriptions using a constant rate of change

3. Imagine the vase shown below filling with water at a constant rate. Sketch a graph of the height of the bottle as a function of the amount of water that is in the bottle. Start from an empty bottle and end when the bottle is completely full. Explain why you drew the graph the way you did.



Answer: The rate of change of the height should increase as time goes on (the cross-sectional volume decreases as time goes on). So many graphs are possible again, but one possibility is

