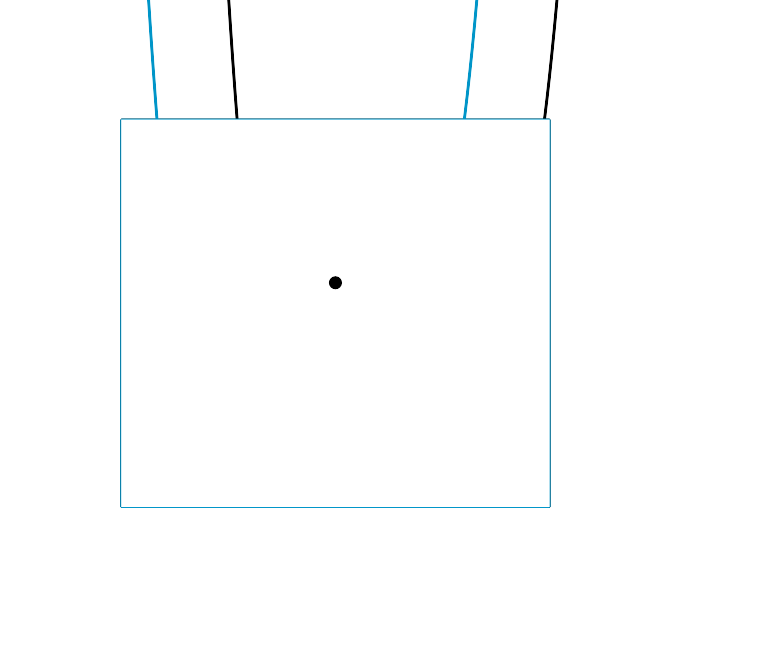
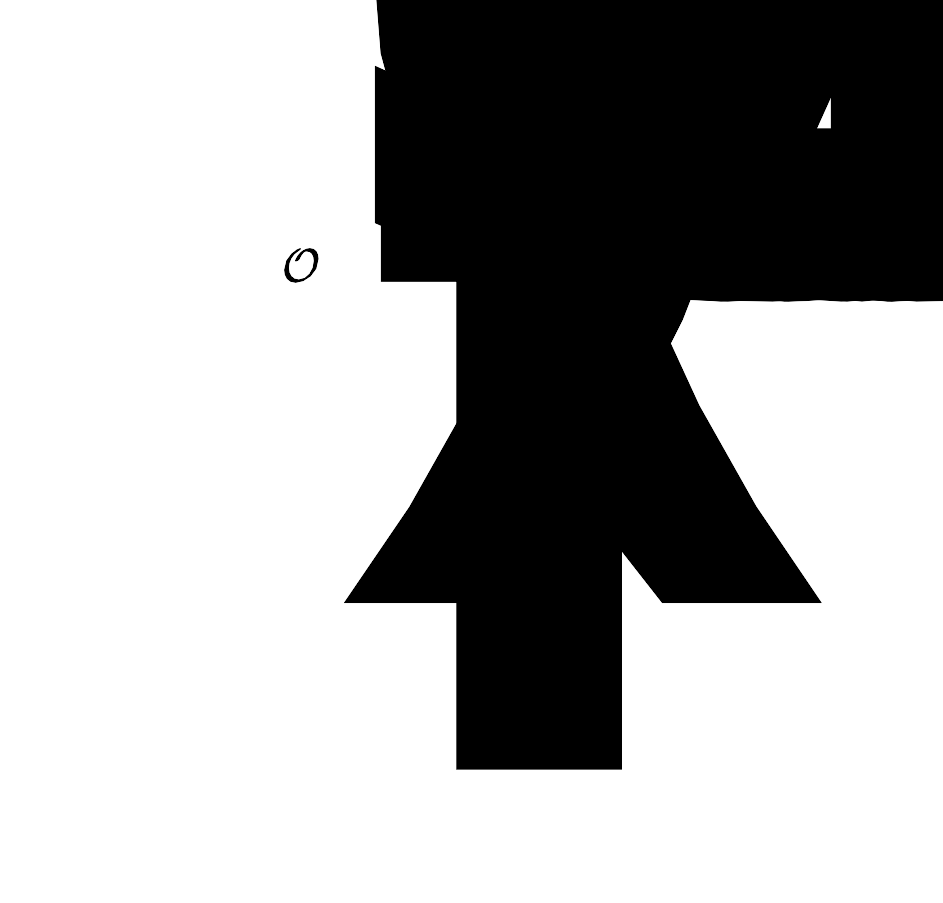
### Lesson 3 Practice Problems

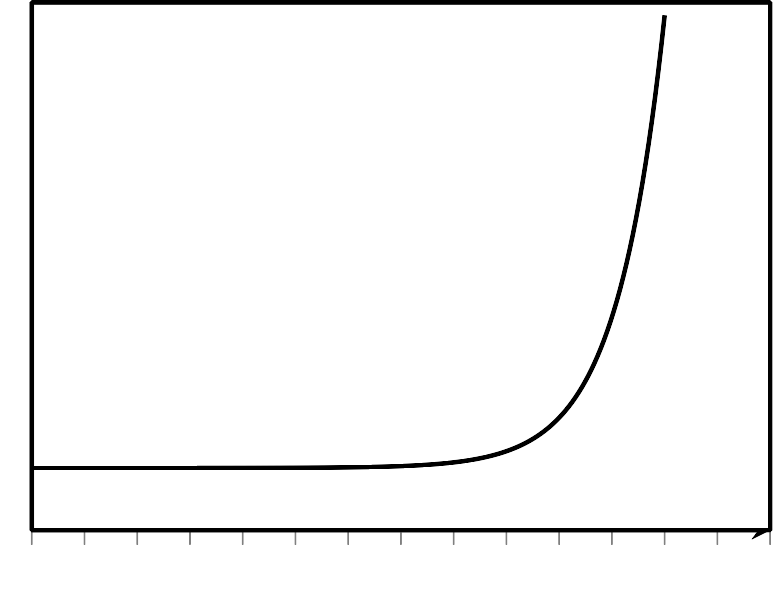
1. Here is a graph of and a graph of . Express in terms of using function notation.

* 

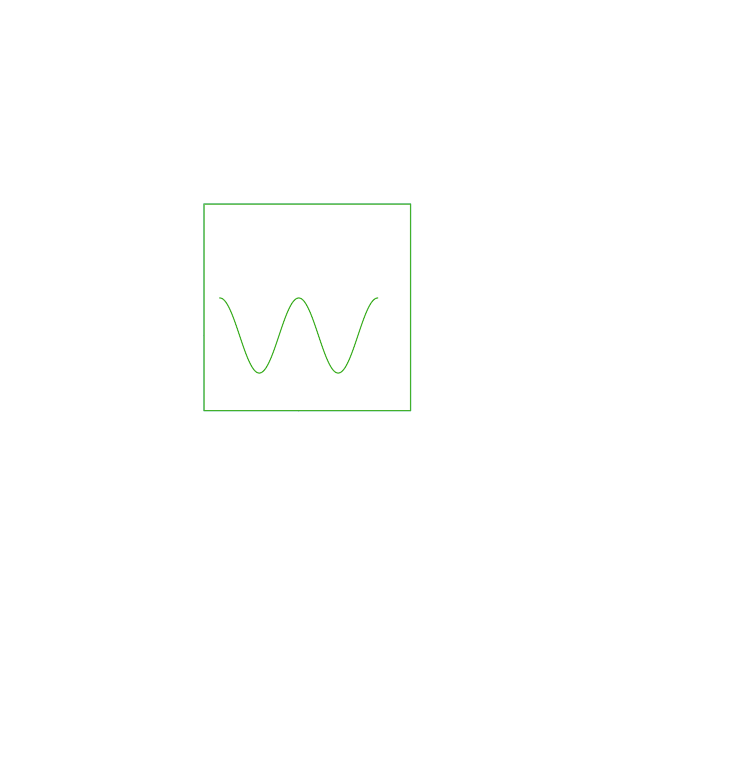
1. Tyler leaves his house at 7:00 a.m. to go to school. He walks for 20 minutes until he reaches his school, 1 mile from his house. The function gives the distance , in miles, of Tyler from his house minutes after 7:00 a.m.
   1. Explain what means in this context.
   2. On snowy days, Tyler’s school has a 2 hour delayed start time (120 minutes). The function gives Tyler’s distance , in miles, from home minutes after 7:00 a.m. with a 120 minute delayed start time. If , then what is the corresponding point on the function ?
   3. Write an expression for in terms of .
   4. A new function, , is defined as explain what this means in terms of Tyler’s distance from school.
2. *Technology required.* Here are the data for the population , in thousands, of a city decades after 1960 along with the graph of the function given by . Elena thinks that shifting the graph of up by 50 will match the data. Han thinks that shifting the graph of up by 60 and then right by 1 will match the data.
   1. What functions define Elena's and Han's graphs?
   2. Use graphing technology to graph Elena's and Han's proposed functions along with .
   3. Which graph do you think fits the data better? Explain your reasoning.

* 

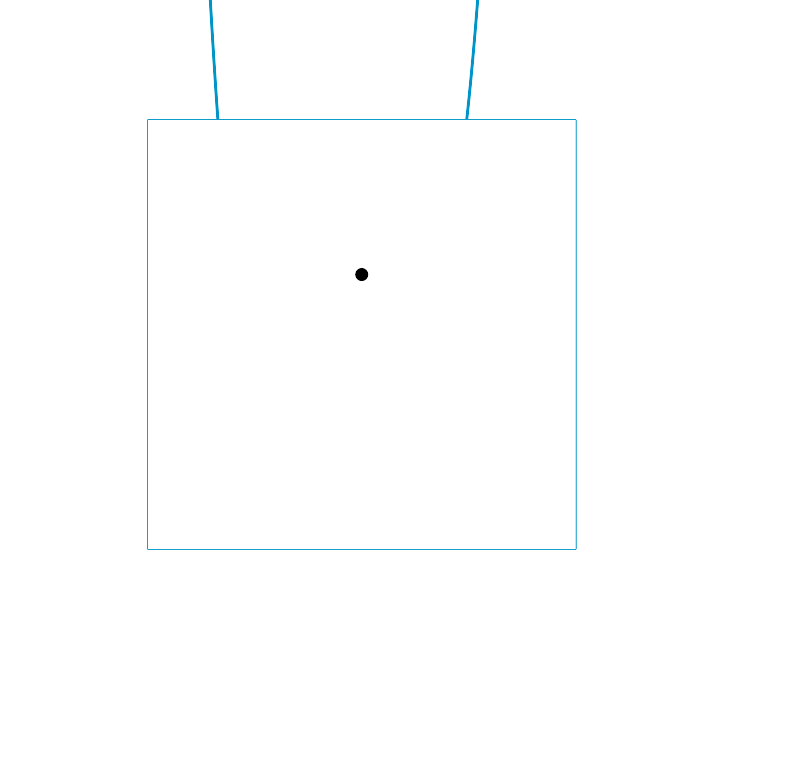
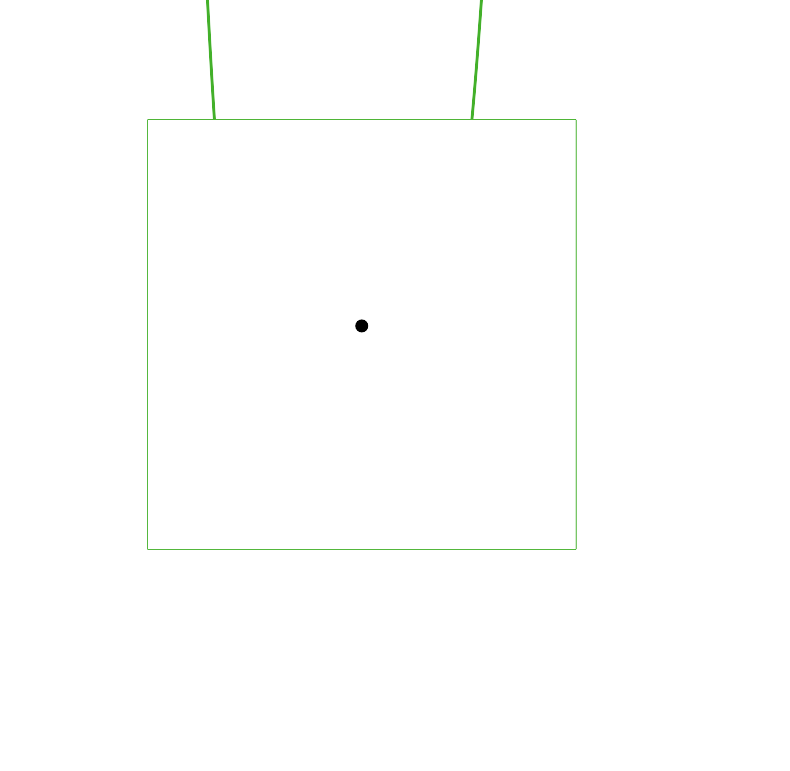
1. Here is a graph of for a function .

* Sketch the graph of .
* 

1. Describe how to transform the graph of to the graph of :

* 
  1. using only translations
  2. using a reflection and a translation
* (From Unit 5, Lesson 1.)

1. Here is a graph of function and a graph of function . Express in terms of using function notation.

* 
* 
* (From Unit 5, Lesson 2.)



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