Teacher Presentation Materials

## Unit 5 Lesson 10: Combining Functions

### 1 Notice and Wonder: Are Book Sales Improving? (Warm up)

#### Student Task Statement

What do you notice? What do you wonder?

|  |  |  |
| --- | --- | --- |
| (years since 2010) | number of books sold in the US (millions) | population of the US (millions) |
| 0 | 2,530 | 309.35 |
| 1 | 2,400 | 311.64 |
| 2 | 2,730 | 313.99 |
| 3 | 2,720 | 316.23 |
| 4 | 2,700 | 318.62 |
| 5 | 2,710 | 321.04 |
| 6 | 2,700 | 323.41 |

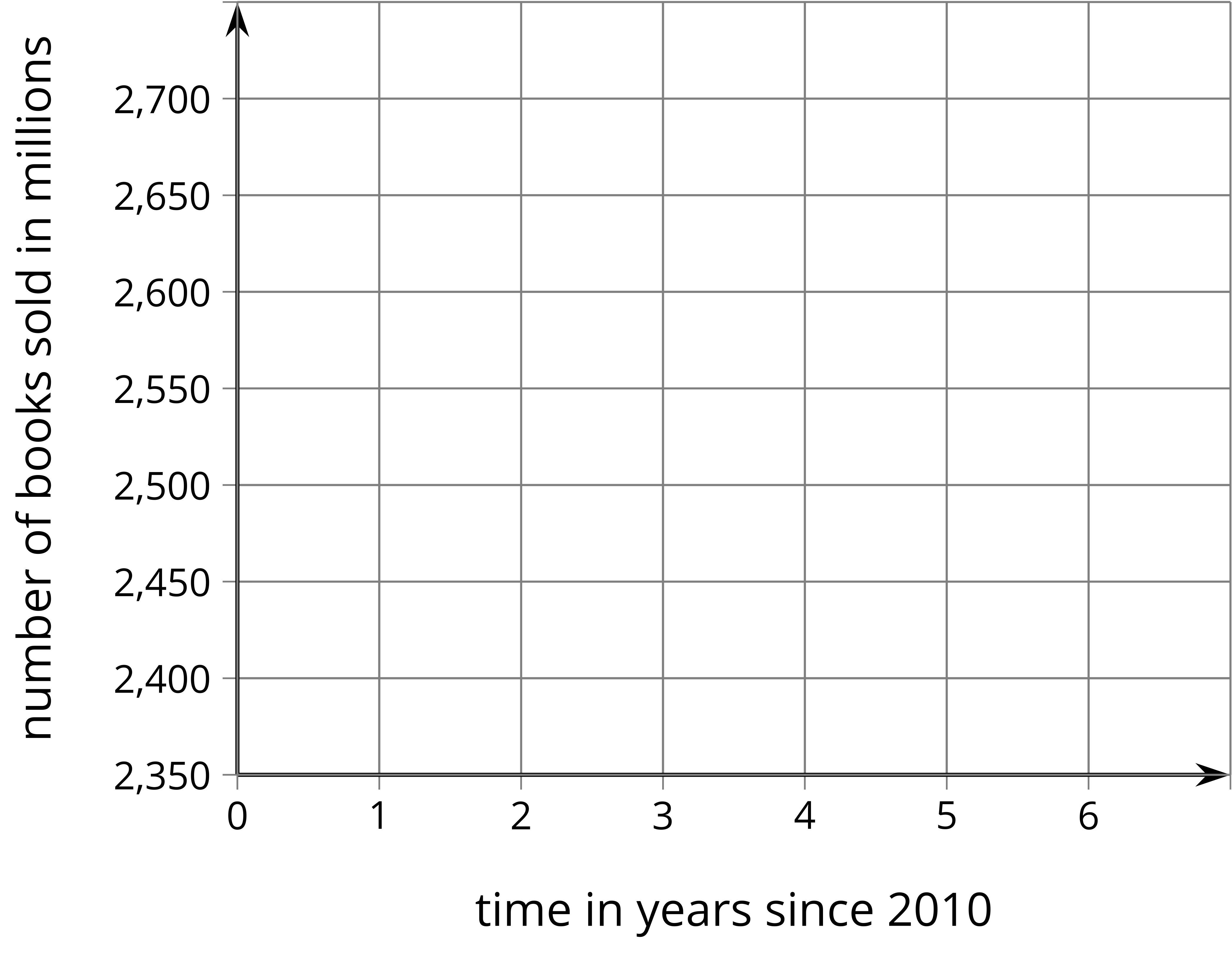
### 2 How Many Books Can One Person Have?

#### Student Task Statement

The table shows the values of two functions, and , where is the population of the US, in millions, years after 2010, and is the number of books sold per year, in millions, years after 2010.

|  |  |  |  |
| --- | --- | --- | --- |
| (years since 2010) | (millions) | (millions) |  |
| 0 | 2,530 | 309.35 |  |
| 1 | 2,400 | 311.64 |  |
| 2 | 2,730 | 313.99 |  |
| 3 | 2,720 | 316.23 |  |
| 4 | 2,700 | 318.62 |  |
| 5 | 2,710 | 321.04 |  |
| 6 | 2,700 | 323.41 |  |

1. Plot the values of as a function of . What does the plot tell you about book sales?

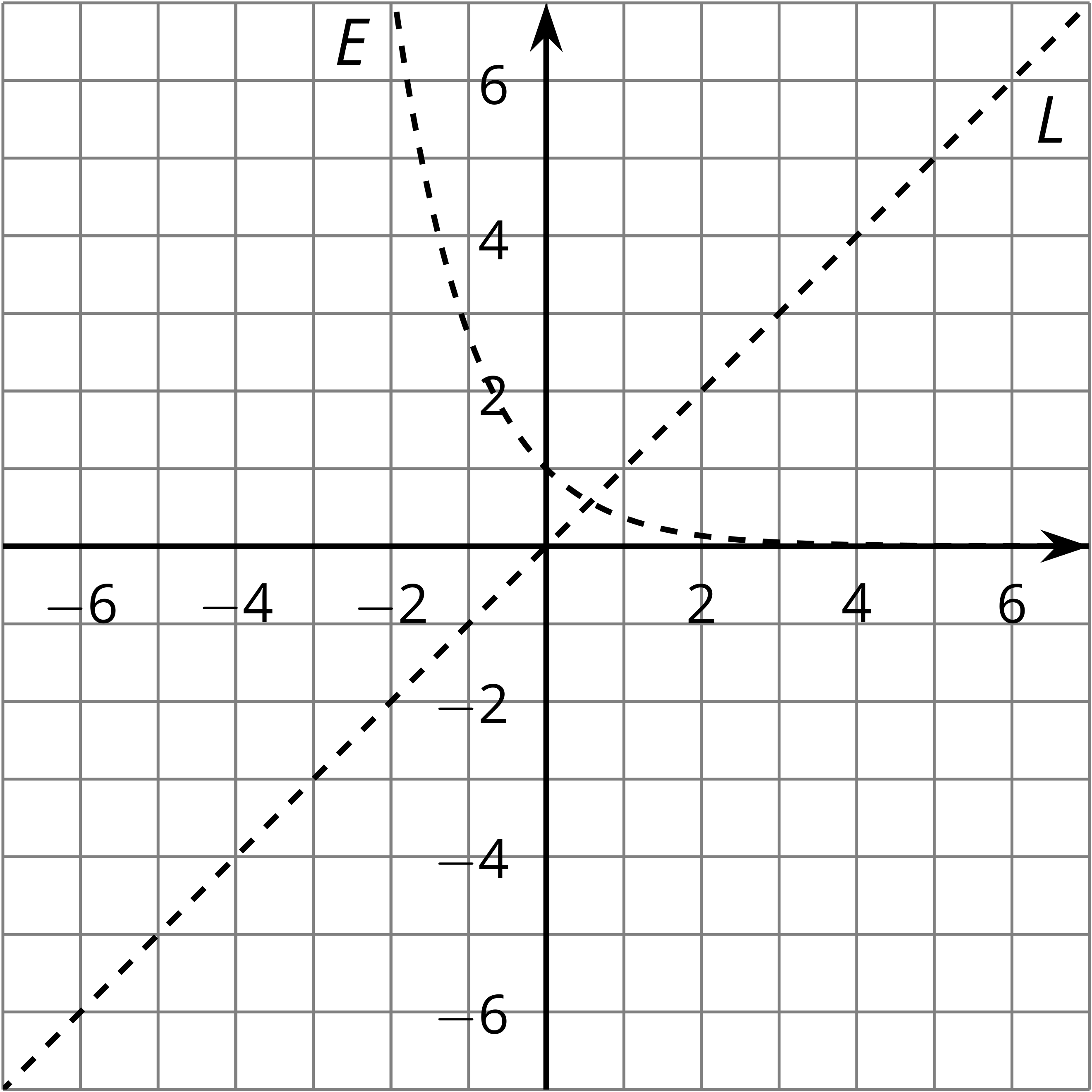
* 

1. How many books were sold per person in 2010 and 2016? What do these values tell you about book sales?
2. Define a new function by . Complete the table and then graph the values of . What do the values of tell you?

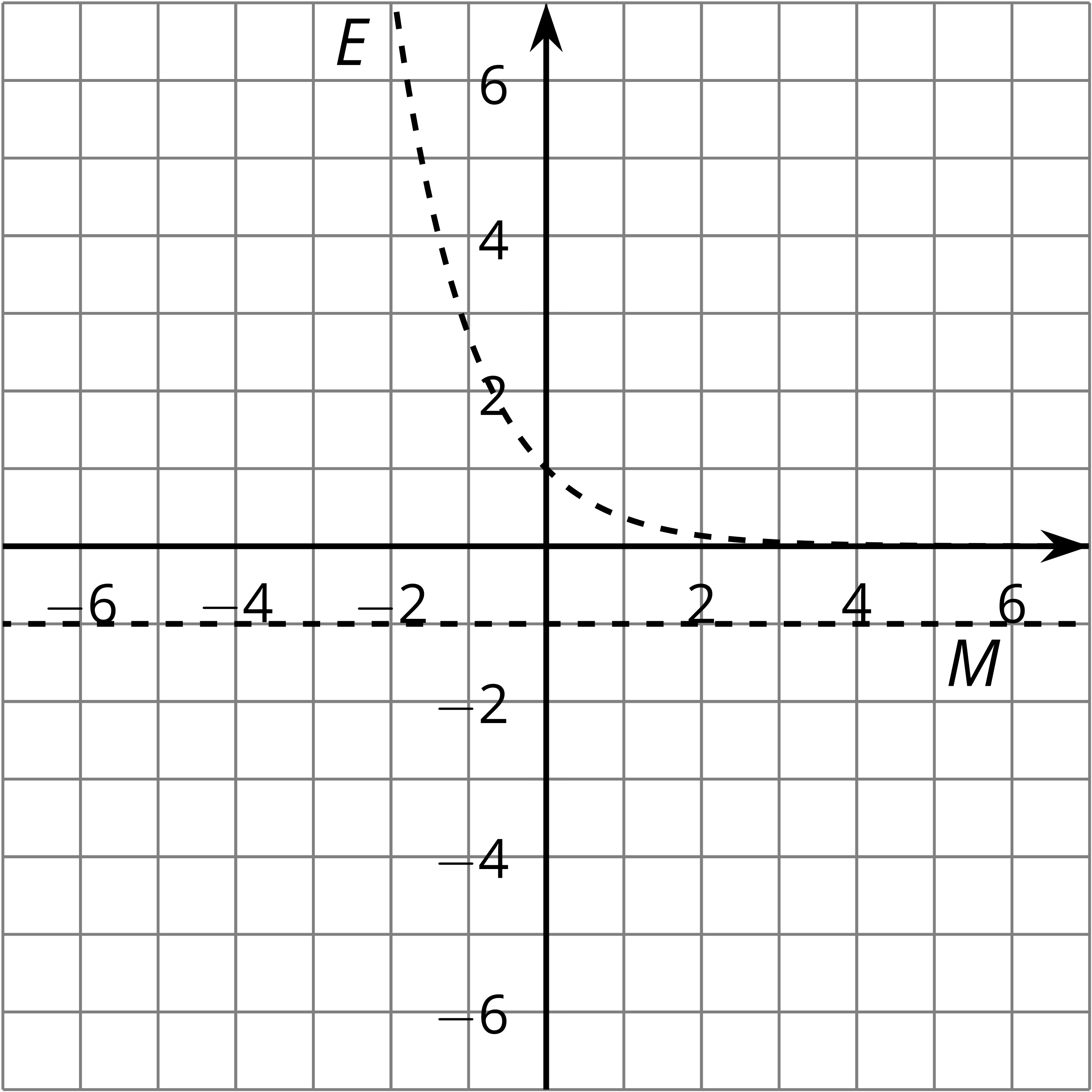
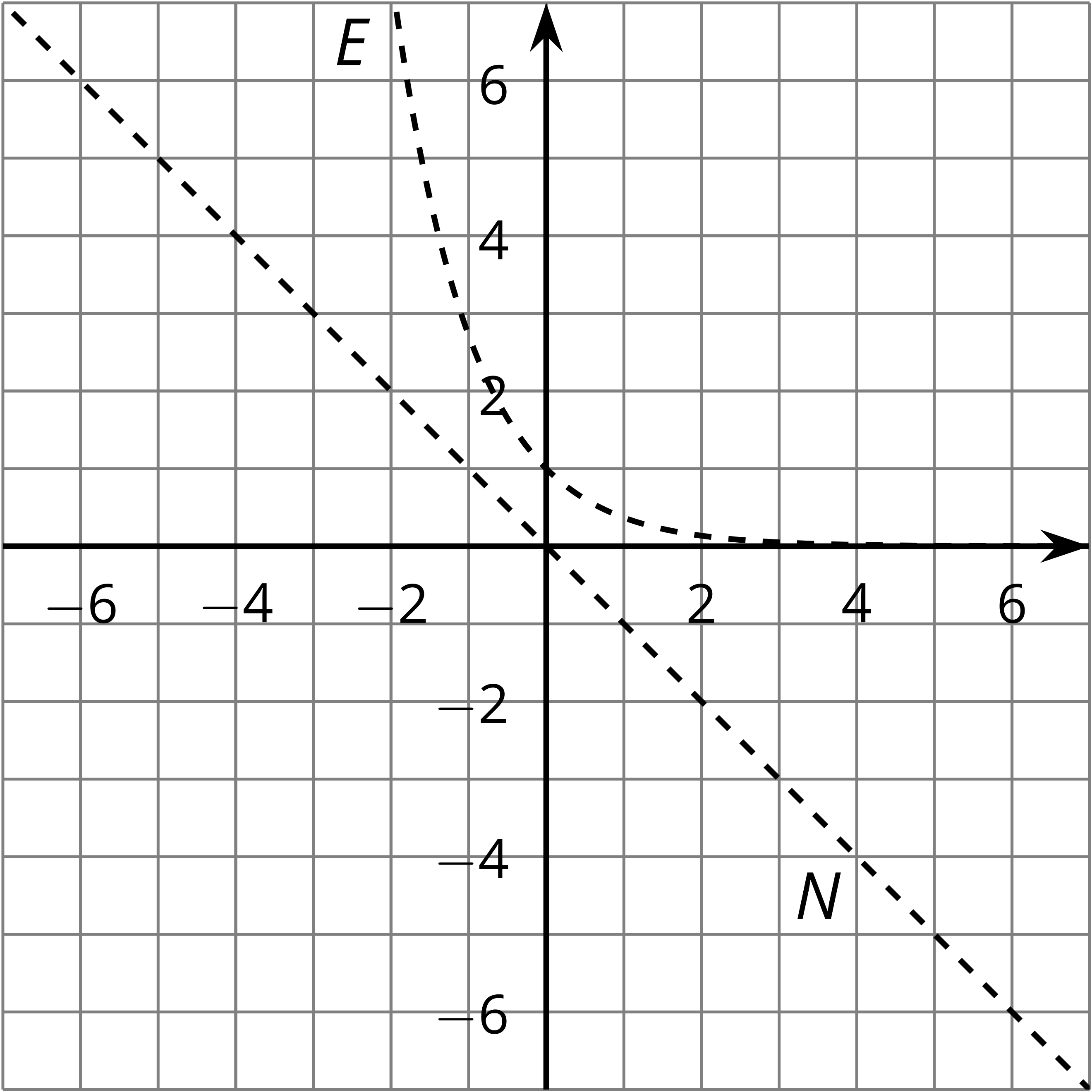
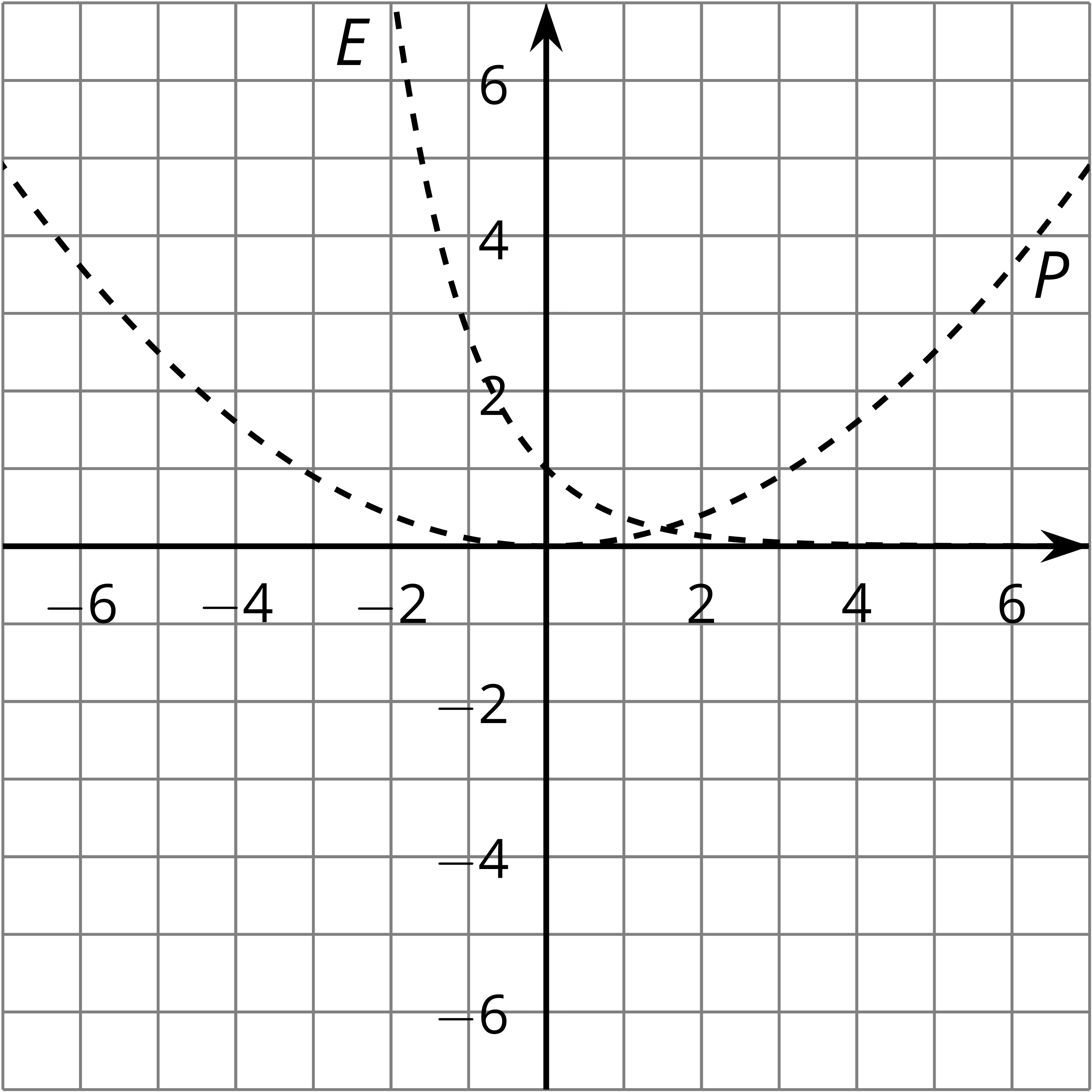
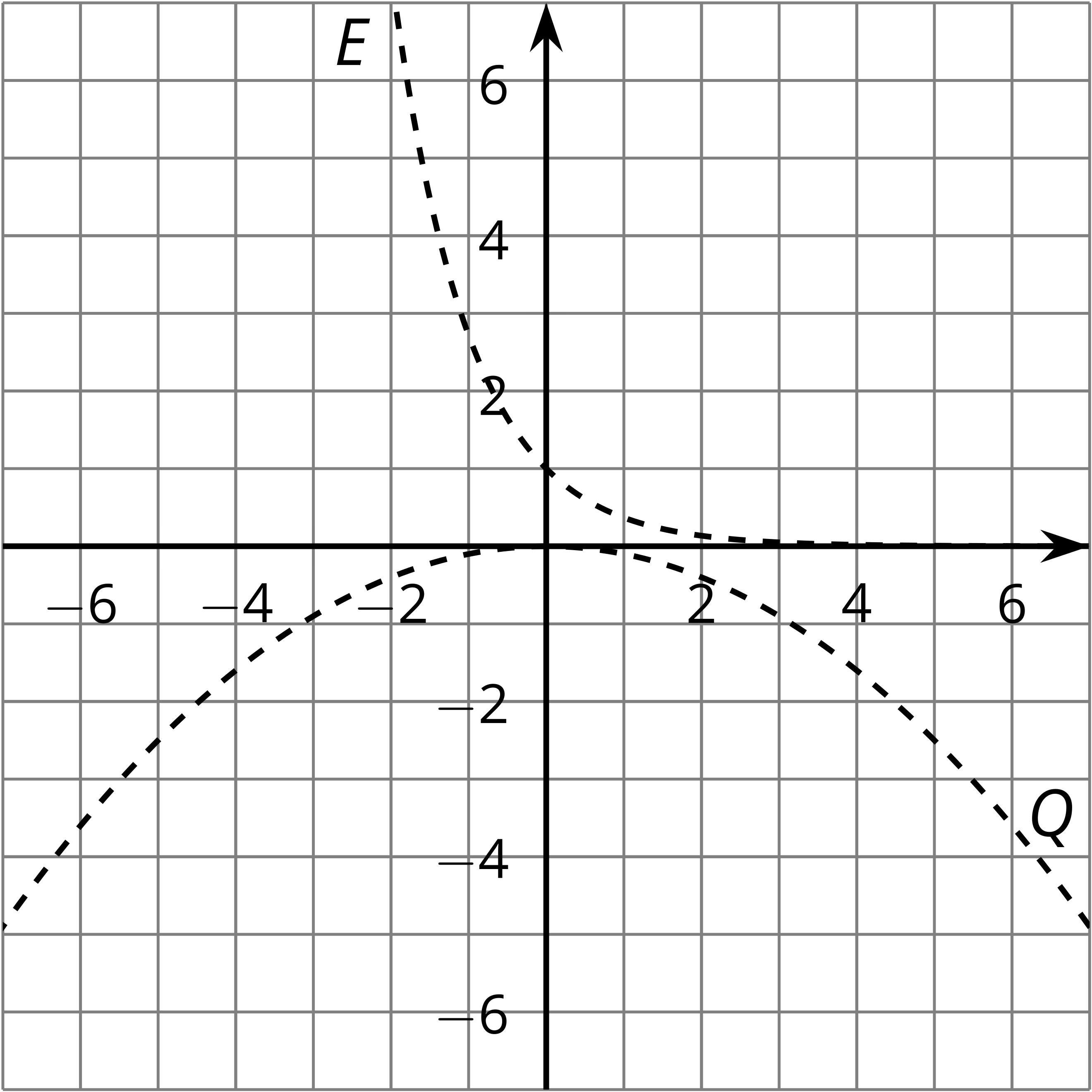
### 3 Adding Functions

#### Student Task Statement

1. Here are the graphs of two functions, and . Define a new function by adding and , so . On the same axes, sketch what you think the graph of looks like.

* 

1. Sketch the graph of the sum of and each of the following functions.

* 
* 
* 
* 



© CC BY 2019 by Illustrative Mathematics