## Unit 4 Lesson 12: The Number

### 1 Matching Situations and Equations (Warm up)

#### Student Task Statement

Match each equation to a situation it represents. Be prepared to explain how you know. Not all equations have a match.

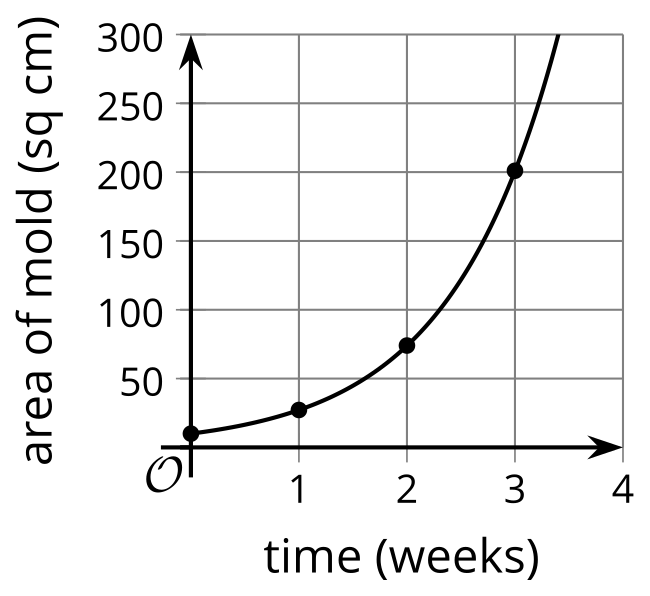
1. A scientist begins an experiment with 400 bacteria in a petri dish. The population doubles every 10 hours. The function gives the number of bacteria hours since the experiment began.
2. A patient takes 400 mg of a medicine. The amount of medicine in her bloodstream decreases by 25% every 10 hours. The function gives the amount of medicine left in her bloodstream after hours of taking the medicine.
3. The half-life of a radioactive element is 10 years. There are 400 g of the element in a sample when it is first studied. The function gives the amount of the element remaining years later.
4. In a lake, the population of a species of fish is 400. The population is expected to grow by 25% in the next decade. The function gives the number of fish in the lake years after it was 400.

### 2 Notice and Wonder: Moldy Growth

#### Student Task Statement

A spot of mold is found on a basement wall. Its area is about 10 square centimeters. Here are three representations of a function that models how the mold is growing.

| time (weeks) | area of mold (sq cm) |
| --- | --- |
| 0 | 10 |
| 1 | 27 |
| 2 | 74 |
| 3 | 201 |
| 4 | 546 |



What do you notice? What do you wonder?

### 3

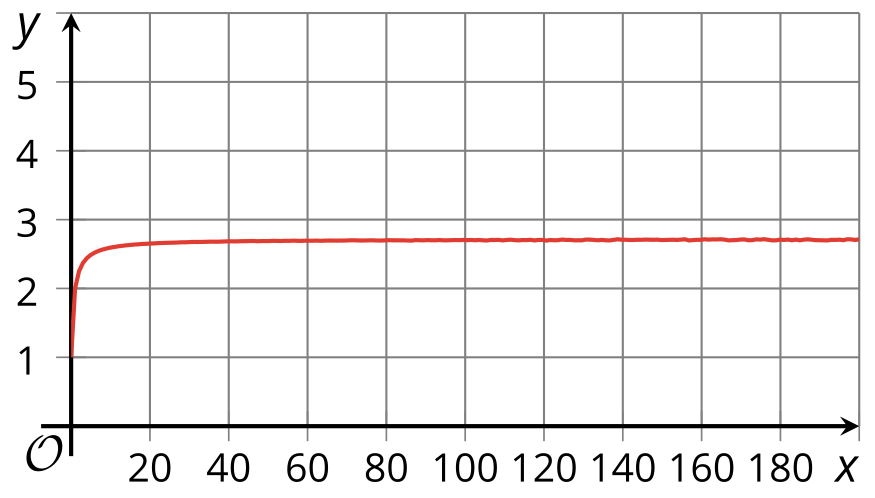
#### Student Task Statement

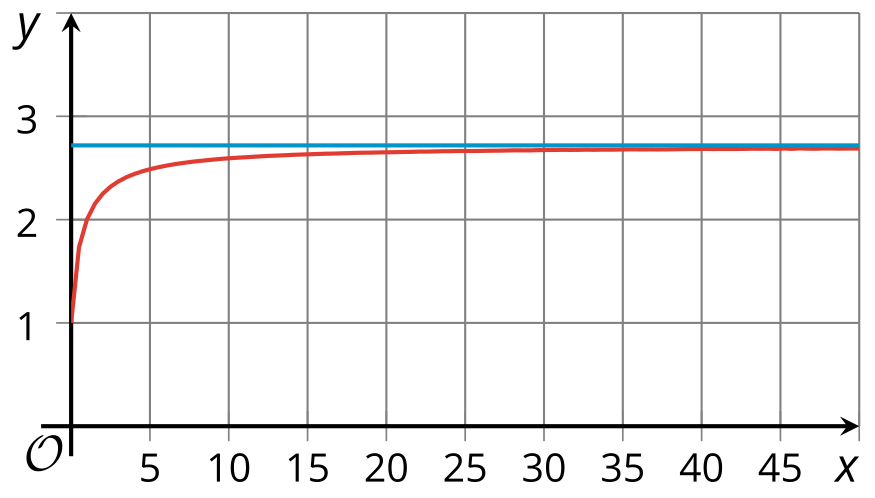
1. Here are some functions. For each function, describe, in words, the outputs for very tiny, positive values of and for very large values of .

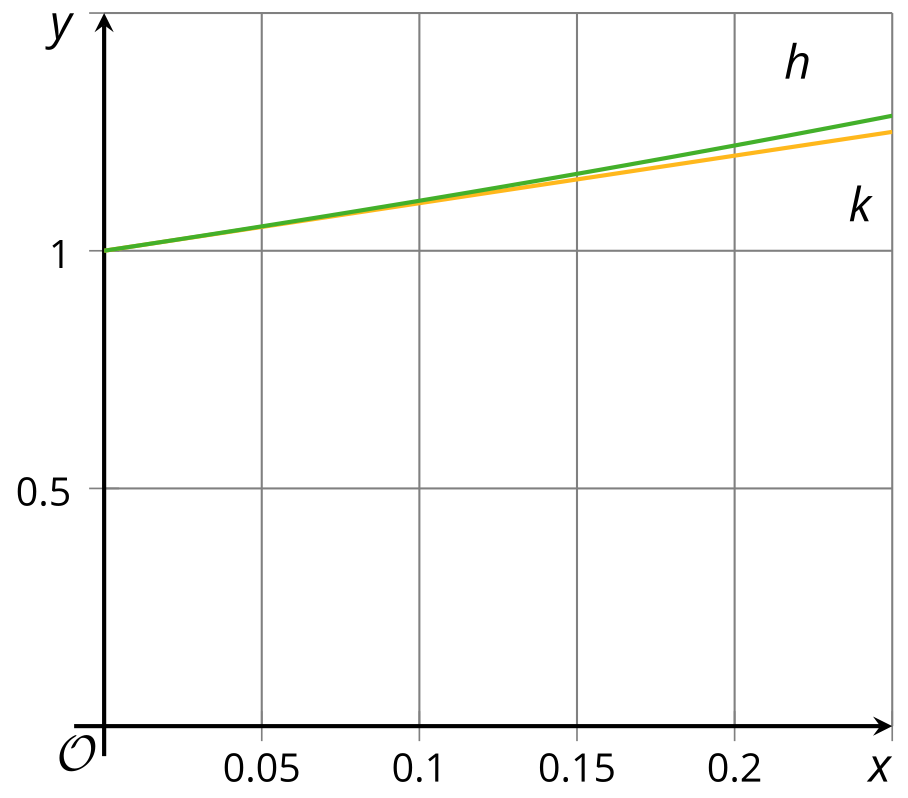


1. Remember that . What does the function have to do with the number ?
2. What do you notice about the relationship between and for very small, positive values of ?

#### Activity Synthesis









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