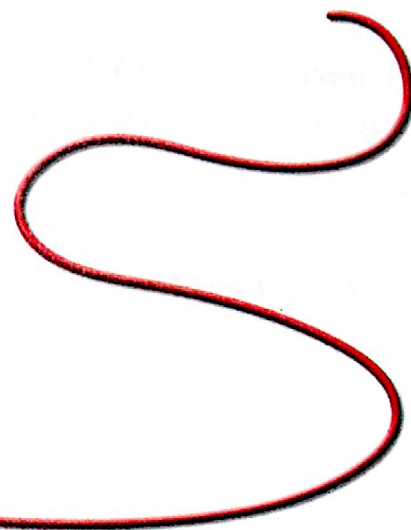


Applications

1. Latisha has a 24-inch string of licorice (LIK uh rish) to share with her friends. As each friend asks her for a piece, Latisha gives him or her half of what she has left. She doesn't eat any of the licorice herself.
 - a. Make a table showing the length of licorice Latisha has left each time she gives a piece away.
 - b. Make a graph of the data from part (a).
 - c. Suppose that, instead of half the licorice that is left each time, Latisha gives each friend 4 inches of licorice. Make a table and a graph for this situation.
 - d. Compare the tables and the graphs for the two situations. Explain the similarities and the differences.



2. Chen, from Problem 4.1, finds that his ballots are very small after only a few cuts. He decides to start with a larger sheet of paper. The new paper has an area of 324 in^2 . Copy and complete this table to show the area of each ballot after each of the first 10 cuts.
 - a. Write an equation for the area A of a ballot after any cut n .
 - b. With the smaller sheet of paper, the area of a ballot is 1 in^2 after 6 cuts. How many cuts does it take to get ballots this small, starting with the larger sheet?
 - c. Chen wants to be able to make 12 cuts before getting ballots with an area of 1 in^2 . How large does his starting piece of paper need to be?

Number of Cuts	Area (in^2)
0	324
1	162
2	81
3	■
4	■
5	■
6	■
7	■
8	■
9	■
10	■

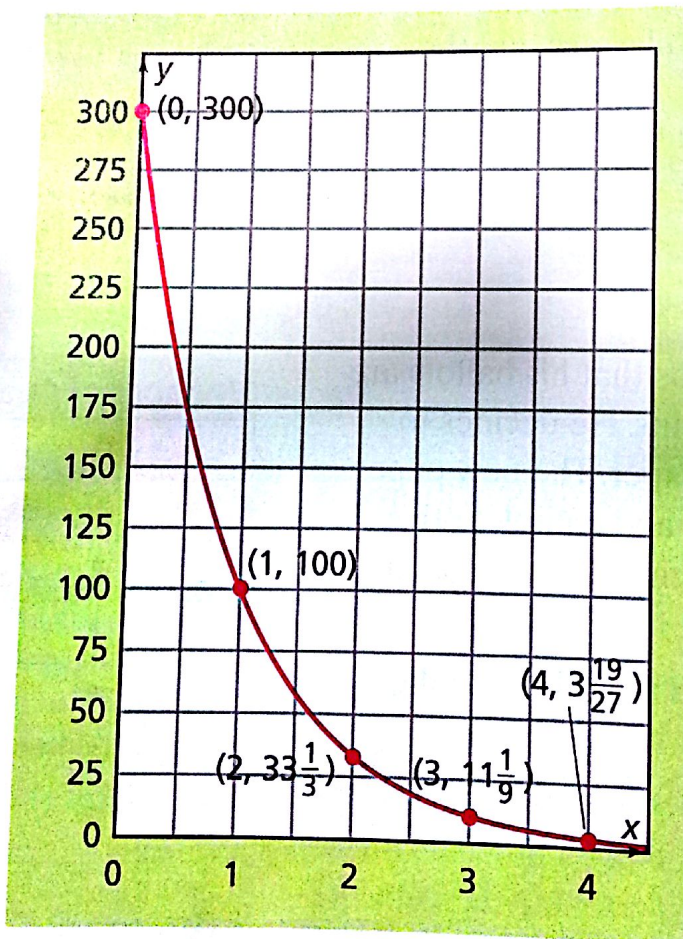
3. Penicillin decays exponentially in the human body. Suppose you receive a 300-milligram dose of penicillin to combat strep throat. About 180 milligrams will remain active in your blood after 1 day.
- Assume the amount of penicillin active in your blood decreases exponentially. Make a table showing the amount of active penicillin in your blood for 7 days after a 300-milligram dose.
 - Write an equation for the relationship between the number of days d since you took the penicillin and the amount of the medicine m remaining active in your blood.
 - What would be the equation if you had taken a 400-milligram dose?

In Exercises 4 and 5, tell whether the equation represents exponential decay or exponential growth. Explain your reasoning.

4. $y = 0.8(2.1)^x$

5. $y = 20(0.5)^x$

6. The graph below shows an exponential decay relationship.



- Find the decay factor and the y-intercept.
- What is the equation for the graph?