In Science class, you are studying bacterial growth. You begin by placing a single bacterium in a petri dish. The number of bacterial triples every day.

1. Complete the table of values below.

|  |  |
| --- | --- |
| Time | Number of bacteria |
| Days | Bacteria |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |

2. Write an equation to model the number of bacteria over time.

3. Graph the function below.



4. What is the y-intercept of the graph? Describe what this means in terms of the problem situation. Is this realistic in this problem situation?

5. What is the x-intercept of the graph? Describe what this means in terms of the problem situation. Is this realistic in this problem situation?

6. Determine an equation for the inverse of f(x) = 3x using logs.

7. Perform a change-of-base conversion to allow you to enter the inverse function into your calculator.

8. Create a graph of f(x), f-1(x), and the line y = x.



9. What is the y-intercept of f(x)? What is the x-intercept of f-1(x)?

10. Is this consistent with what you know about inverses? Explain.