Exercise 1

Consider the function \( y = \frac{1}{x} \).

1. Sketch the graph of the function.

2. Sketch the graph of the same function reflected across the x-axis. What is the equation that describes the new function you have graphed?

3. Now, sketch the graph of the function from part (2) translated 2 units up. What is the equation that describes the final function you have graphed?

4. What are the domain and range of the final function you found in part (3)?
5. Explain why the function you found in part (3) is one-to-one.

6. What is the inverse function for the function you found in part (3)?

7. What are the domain and range of the inverse function, that is, the function you found in part (5)?

8. Sketch a graph of the inverse function, that is, the function you found in part (5).