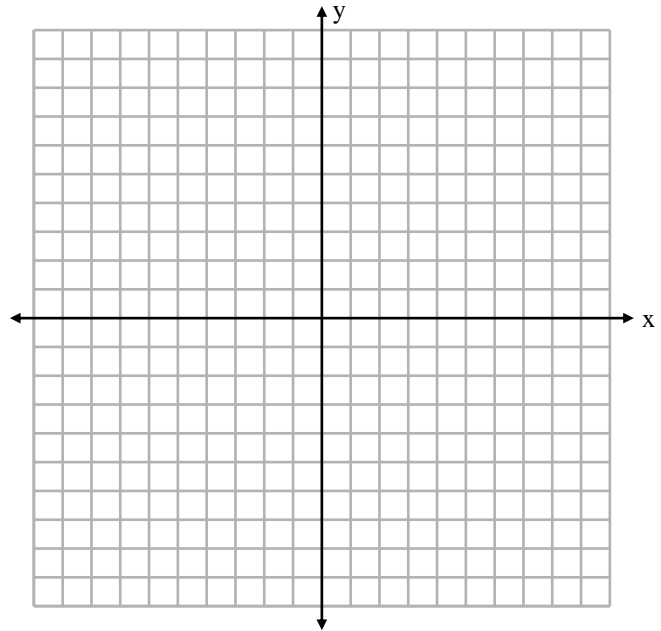


Instructions: Show all work. Use exact answers unless specifically asked to round. Answer all parts of each question.

1. Sketch the graph of $f(x) = -e^{x/2} + 2$. Then find the inverse of $f(x)$ and sketch that function on the same graph.



2. State the domain and range of the functions:

a. $f(x) = \left(\frac{1}{2}\right)^{x-1} - 2$

b. $g(x) = \log\left(\frac{x+1}{x-5}\right)$

3. Expand the expression $\log\left(\frac{\sqrt[4]{x}y^4}{z^5}\right)$ as much as possible.

4. Combine the expression $\frac{1}{2}[5 \ln(x+6) - \ln x - \ln(x^2 - 25)]$ into a single logarithmic expression.