1. (3 points) Determine a formula for an exponential function given that its graph goes through the points \((-1, 5), \left(\frac{1}{3}, 80\right), \) and \((0, 40)\).

\[
\begin{align*}
(\frac{1}{3}, 80) & \rightarrow 80 = C \alpha^{\frac{1}{3}} \\
(0, 40) & \rightarrow 40 = C \alpha^0 \\
(-1, 5) & \rightarrow 5 = C \alpha^{-1}
\end{align*}
\]

So, using:

\[
\begin{align*}
5 & = 40 \alpha^{-1} \\
\Rightarrow 5 & = \frac{40}{\alpha} \\
\Rightarrow 5\alpha & = 40 \\
\Rightarrow \alpha & = 8
\end{align*}
\]

\[
\gamma = 40 \cdot 8^x
\]

\[
\begin{align*}
80 & = 40 \alpha^{\frac{1}{3}} \\
2 & = \alpha^{\frac{1}{3}} \\
\Rightarrow 2 & = (\sqrt[3]{\alpha}) \\
\Rightarrow 8 & = \alpha.
\end{align*}
\]
What is the value of \( f^{-1}(3) \)?

Given that \( g(x) = \frac{1 + 2e^x}{e^{x+1}} \), find a formula for \( g^{-1}(x) \) (you don't need to find the domain, but you should know how to).

Solve for \( t \) in the equation below.