

Provide a clear and organized presentation.

1. If $f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}}$, then determine $f^{-1}(x)$

2. Prove the following using mathematical induction:

$$\sum_{i=1}^n \frac{1}{i(i+1)} = \frac{n}{n+1} \quad \forall n \in \mathbb{N}$$