1. (a) The range of the hyperbolic tangent function $\tanh(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}}$ is $(-1, 1)$. Use the fact that $e^{anything} > 0$ to explain why 2 and $-3$ are not in the range of $\tanh(x)$.

   (b) Show that $\tanh(x)$ is always strictly increasing, and hence that it is one-to-one.

   (c) What are the domain and range of the inverse function $\tanh^{-1}(x)$?