Q1] [6 points] Use the Intermediate Value Theorem to show that the graphs of the functions

\[ f(x) = \cos \pi x \quad \text{and} \quad g(x) = x^2 - 4 \]

intersect.
Q2]... [4 points] Find all horizontal asymptotes of

\[ f(x) = \frac{1 - e^x}{1 + 2e^x}. \]

Q3]... [5 points] Evaluate the limit or show that it does not exist.

\[ \lim_{x \to \infty} \left( \sqrt{x^2 - 3x} - \sqrt{x^2 + 4x} \right). \]