1. Find the limit \( \lim_{x \to 1} \arccos(\ln(\sqrt{x})) \).

2. Show that the function \( F(x) = (x - 1)^2(x - 5)^2 + x \) takes on value 3 for some value of \( x \).

3. Compute the limit
   \[
   \lim_{x \to +\infty} \frac{3x^3 + 2x^2 - 5x + 1}{-2x^3 + x^2 - 4x + 7}.
   \]

4. Consider the function \( f(x) = \frac{3}{2} \left( \frac{x}{x^2 - 1} \right)^{\frac{3}{2}} \).
   a) Find the domain of \( f(x) \).
   b) How does the graph behave as \( x \to 0 \)?
   c) How does the graph behave as \( x \to +1 \) and \( x \to -1 \)?
   d) Find the vertical and horizontal asymptotes for \( f(x) \).
   e) Sketch the graph of \( f(x) \).