Show all work, clearly and legibly, to receive full credit. Correct spelling, organization of your solution, and proper use of mathematical notation all count. You may use a stand-alone graphing calculator, but not any internet-based calculators. No notes, books, or other additional resources are permitted. Good luck!

1.) (5 pts.) Use the IVT to show that \( f(x) = x^5 + x^3 - 5x + 2 \) has a root (that is, takes on the value 0) for some \( x \) in the interval \([0, 1] \).

- \( f(x) \) is a polynomial, so continuous everywhere, in particular on \([0, 1] \).
  - \([0, 1] \) is closed (includes 0, 1) and bounded (endpoints are finite).
- \( a = 0, f(a) = 2, b = 1, f(b) = -1 \)
- \( y = 0 \) is a number between \( f(a) \) and \( f(b) \).

Therefore IVT guarantees there is a \( c \) in \([0, 1] \)
  - for which \( f(c) = 0 \), that is, \( f \) has a root.

2.) (5 pts.) In the statement “If it’s raining, then it’s cloudy”, which part is the hypothesis, and which part is the conclusion?

Hypothesis: "it’s raining"

Conclusion: "it’s cloudy"