Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Intermediate Value Theorem (2.4) Worksheet



1. What was your height at birth? \_\_\_\_

*The average baby born in North America measures 20” at birth.*

What is your height today? \_\_\_\_

2. Sketch a graph of how your height has changed over the course of your lifetime.

3. Was there a day in your life that you measured exactly 40”? 37.6”?



4. A continuous function y = f(x)is known to be negative at x = 0 and positive at x = 1. Why does the equation f(x) = 0 have at least one solution between x = 0 and x = 1? Illustrate with a sketch.

5. In your own words, what does the Intermediate Value Theorem mean?

6. Why do we need continuity for the Intermediate Value Theorem?

7. Prove that f(x) = x3 + x + 1 has at least one zero between -1 and 0. (i.e. f(x)=0)

8. Show that f(x) = x3 + x = 9 on [1,2].

9. Is it true that a continuous function that is never zero on an interval never changes sign on that interval? Give reasons for your answer?