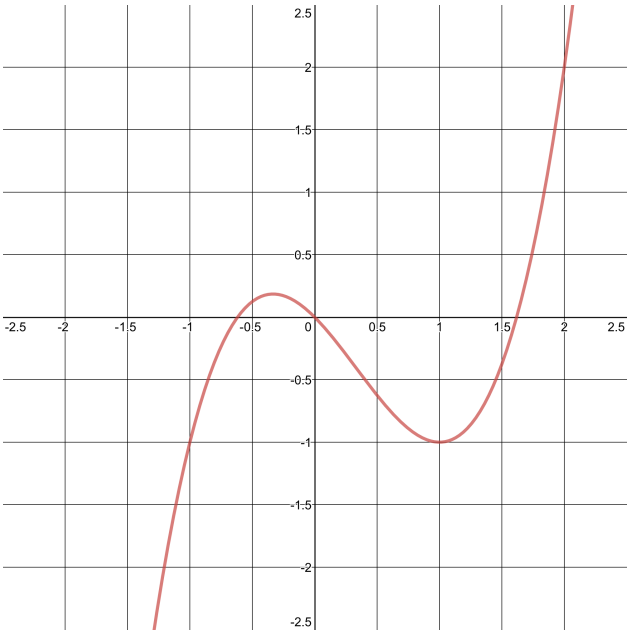
Name: _____

Quiz 2

Math 111

You have 20 minutes to complete **both sides** of this quiz. When you're finished, first check your work if there is time remaining, then turn it in. You may use a scientific calculator, but not a graphing one. **Show all your work.**

1. (8 points) Let $g(r)$ be defined by the following graph.



a) Is g increasing, decreasing, or constant on the interval $[0, 1]$? What about on $[1, 2]$?

b) What is the average rate of change of g on the interval $[0, 2]$?

2. (8 points) One biological model suggests that the growth speed (molting periods per day) of a nymphal aphid is a linear function of temperature, in degrees Fahrenheit. The data suggests that at a temperature of 45°F the aphids experience 0.01 molting periods per day, and that the growth speed increases by 0.011 for each one-degree increase in temperature.

a) Find a formula for the aphid's growth speed as a function of temperature.

b) What does the vertical axis intercept of this model represent in the applied context? Is that interpretation meaningful?

3. (8 points) Let $t(x) = \begin{cases} \sqrt{x+1}, & x \leq 0 \\ x, & 0 < x < 1 \\ \frac{1}{x}, & 1 \leq x \end{cases}$.

a) What is $t(0)$? What about $t(1)$?

b) What is the domain of t?