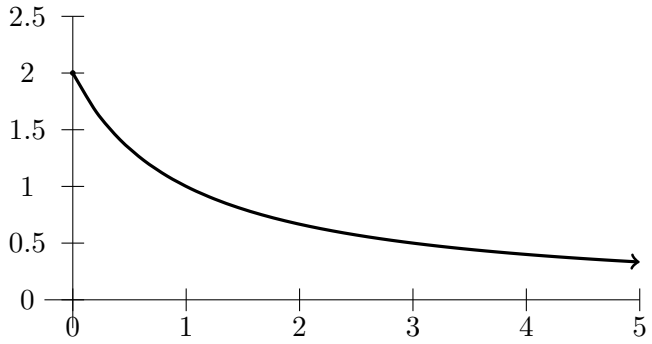
Math 122B020F14 Quiz 1 September 25, 2014 Name: _____

For the questions 1-3, the function $s(t) = \frac{2}{t+1}$, with domain $t \geq 0$ gives the position (in meters) of an object at time t seconds.

1. The graph of $y = s(t)$ for $0 \leq t \leq 5$ is shown below.



On the graph, plot and label the following quantities:

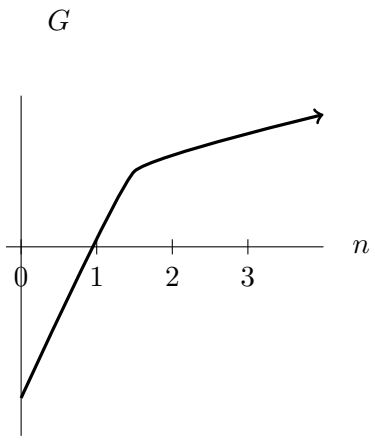
$$s(2), \quad s(2) - s(1), \quad \frac{s(2) - s(1)}{2 - 1}$$

What do these quantities represent?

2. Approximate $s'(1)$. You may use your calculator, but you must provide a table of values.

3. Compute $s'(t)$ *exactly*, using the definition. You must show all algebraic steps for full credit.

4. Let's suppose that $G(n)$ gives the **growth rate** of a population of wolves as a function of the number of prey available to them. The units of n are hundreds of prey, and the units of $G(n)$ are **number of wolves per day**. Below is a possible graph of $G(n)$:



What do the following properties of $G(n)$ mean in terms of the **actual wolf population**?

- $G(n) < 0$ for $0 \leq n < 1$

- $G(200) = 5$