Name: ———————————

1. A word on class structure: The take-home portion of the quizzes is generally intended to contain questions whose answers do not fit tidily in WebWork, or which require a small amount of conceptual thought.

2. Class notes for this week: This week we have covered Sections 1.4 and 1.5. Next week we will cover Sections 1.6 and 1.7. Do not forget to start doing your webwork assignments, the first two of which are due **Sunday, September 4 at 11:00 p.m.** in order to receive full credit, and to complete the Gateway Algebra Exam by **Tuesday, September 6 at 11:00 p.m.**

3. If you have not already done so, send me an email introducing yourself. Let me know if you like to be called something other than your registrar listing, and anything I should know about your background.

4. (2 points) Consider the function $f(x) = \sin\left(\frac{\pi}{x}\right)$, whose graph includes the point $(1, 0)$.

   (a) (1 point) Find the slopes of the secant lines to this curve between $(0, 1)$ and $(b, f(b))$ for $b = .5, .6, .7, .8, .9$. Does this seem to be approaching a limit?

   (b) (2 points) Plot a graph of this function using a calculator or WolframAlpha, and explain why the values you produced in part (a) are not very helpful for approximating the slope of the tangent line to this curve at $(0, 1)$.

5. A patient receives a 150 mg injection of a drug every four hours. The graph shows the amount $f(t)$ of the drug in the bloodstream after t hours.
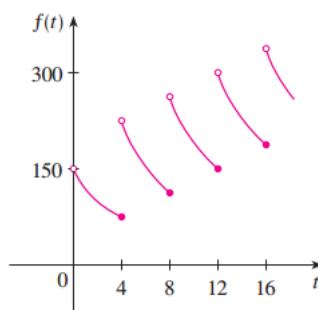
(a) (1 point) What are $\lim_{t \to 12^-} f(t)$ and $\lim_{t \to 12^+} f(t)$?

(b) (1 point) Explain in a sentence what these limits mean.