8. The function $L(x) = \dfrac{1}{\ln(x)}$ is differentiable over its domain.

   (a) (2 points) What is the domain of L?

   (b) (4 points) Write the formula for the derivative of L at $x = a$ using the *limit definition* of the derivative.

   (c) (4 points) Given $\dfrac{dL}{dx}\big|_{x=2} = -1.0407$ and $\dfrac{dL}{dx}\big|_{x=2.5} = -.4764$ and given that the derivative is *monotonic* (meaning the derivative does not change behavior from decreasing to increasing or vice versa) for all $x > 1$, what does this information tell you about the graph of L for x near 2? Explain your reasoning using words and symbols (*i.e.*, **not** by drawing a graph).