5. [14 points] Consider the family of functions

$$g(x) = \frac{ax^b}{\ln(x)}$$

where a and b are nonzero constants.

a. [4 points] Calculate $g'(x)$.

b. [6 points] Find values for a and b so that $g(e) = 1$ and $g'(e) = 0$.

c. [4 points] With the values of a and b you found in (b), is $x = e$ a local minimum of g, a local maximum of g or neither? Justify your answer.