

Problem 6: Compute the Limit

Let f and g be continuously differentiable functions in a neighborhood of $a \in \mathbb{R}$ such that $f(a) = g(a) = b$ and $f'(a) \neq g'(a)$. Determine the limit

$$\lim_{x \rightarrow a} \frac{e^{f(x)} - e^{g(x)}}{f(x) - g(x)}$$

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

Posting Date 10/26/2019. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 5 pm on 11/10/2019.