

10. [7 points] Consider the continuous function

$$f(x) = \begin{cases} -2 - \ln(x + 2) & -2 < x \leq -1 \\ x2^{-x} & x > -1 \end{cases}$$

and its derivative

$$f'(x) = \begin{cases} -\frac{1}{x+2} & -2 < x < -1 \\ 2^{-x}(1 - x \ln(2)) & x > -1. \end{cases}$$

a. [2 points] Find all critical point(s) of $f(x)$. Write NONE if there are none.

Answer: critical point(s) at $x =$ _____

b. [5 points] Find the x -coordinate of all global maxima and global minima of $f(x)$ on its domain $(-2, \infty)$. For each, write NONE if there are none. You must use calculus to find your answers, and be sure to show enough evidence to fully justify your answers.

Answer: global max(es) at $x =$ _____

Answer: global min(s) at $x =$ _____