7. [11 points] Consider the continuous function

$$f(x) = \begin{cases} x \cdot 2^{-x} & 1 \le x < 3, \\ \frac{1}{2-x} + \frac{11}{8} & 3 \le x \le 5. \end{cases}$$

Note that the domain of f is $[1, 5]$.

    a. [7 points] Find the x-values of the critical points of f.

    b. [4 points] Find the y-values of the global maximum and global minimum of f if they exist, or explain why they don't exist.