

5. [12 points] Let

$$f(x) = x(x-4)^{4/5}e^{-x} \quad \text{and} \quad f'(x) = \frac{(5-x)(5x-4)e^{-x}}{5\sqrt[5]{x-4}}.$$

Note that the domain of $f(x)$ is $(-\infty, \infty)$.

- a. [6 points] Find all values of x at which $f(x)$ has a local extremum. Use calculus to find and justify your answers, and be sure to show enough evidence to demonstrate that you have found all local extrema. For each answer blank below, write NONE if appropriate.

Answer:

Local max(es) at $x =$ _____ Local min(s) at $x =$ _____

- b. [6 points] Find the values of x for which $f(x)$ attains a global maximum and global minimum. Use calculus to find and justify your answers, and be sure to show enough evidence to demonstrate that you have found all global extrema. Write NONE if appropriate.

Answer:

Global max(es) at $x =$ _____ Global min(s) at $x =$ _____