

5. [13 points] Suppose $f(x)$ is a function defined for all x whose derivative and second derivative are given by
- $$f'(x) = \frac{(x+2)^2(x-3)}{(x+1)^{1/3}} \quad \text{and} \quad f''(x) = \frac{2(x+2)(x-1)(4x+3)}{3(x+1)^{4/3}}.$$

a. [2 points] Find the x -coordinates of all critical points of $f(x)$. If there are none, write NONE.

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

b. [6 points] Find the x -coordinates of all local extrema of $f(x)$.

If there are none of a particular type, write NONE.

Justify your answers, and be sure to show enough evidence to demonstrate that you have found all local extrema.

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

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

c. [5 points] Find the x -coordinates of all inflection points of $f(x)$. If there are none, write NONE.

Justify your answers, and be sure to show enough evidence to demonstrate that you have found all inflection points.

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