4. [12 points] In the following questions, use calculus to justify your answers and show enough evidence to demonstrate that you have found them all. Determine your answers algebraically.

a. [7 points] Let $f(x)$ be a continuous function defined for all real numbers with derivative given by

$$f'(x) = \frac{(2x+1)(x-2)^2}{(x+3)^{\frac{1}{3}}}.$$

Find the x-coordinate(s) of the local maximum(s) and local minimum(s) of the function $f(x)$. Write "NONE" if the function has no local maximum(s) and/or local minimum(s).

Answers: Local maximum(s) at $x =$ _____

Local minimum(s) at $x =$ _____

In the following question, use calculus to justify your answers and show enough evidence to demonstrate that you have found them all. Determine your answers algebraically.

b. [5 points] Let $g(x)$ be a continuous function defined for all real numbers with second derivative given by

$$g''(x) = (2^x - 4)(x^2 - 4).$$

Find the x-coordinates of the inflection points of the function $g(x)$. Write "NONE" if the function has no inflection points.

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