

2. [11 points]

- a. [6 points] Let  $f(x)$  be a continuous function defined for all real numbers and suppose that  $f'(x)$ , the derivative of  $f(x)$ , is given by

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

Find the exact  $x$ -coordinates of all local minima and local maxima of  $f(x)$ . If there are none of a particular type, write NONE. You must use calculus to find and justify your answers. Be sure your conclusions are clearly stated and that you show enough evidence to support them.

**Answer:** Local max(es) at  $x = \underline{\hspace{2cm}}$  and Local min(s) at  $x = \underline{\hspace{2cm}}$

- b. [5 points] Let  $g(x)$  be a different continuous function defined for all real numbers and suppose that  $g''(x)$ , the second derivative of  $g(x)$ , is given by

$$g''(x) = 2^x(x-1)^2(x+5).$$

Find the exact  $x$ -coordinates of all inflection points of  $g(x)$ , or write NONE if there are none. You must use calculus to find and justify your answers. Be sure your conclusions are clearly stated and that you show enough evidence to support them.

**Answer:** Inflection point(s) at  $x = \underline{\hspace{2cm}}$