

6. (15 points) Let  $f(x) = \frac{20x}{x^2 + 3}$  on the domain of all real numbers.

(a) Determine if there are horizontal asymptotes. If so, what are they?

(b) Compute  $f'(x)$  and  $f''(x)$ . Label and box each derivative.

6. continued

(c) Determine the subintervals of the domain on which  $f(x)$  is decreasing. Find all local maxima and local minima of  $f(x)$ .

(d) Determine those subintervals of the domain on which  $f(x)$  is concave up. Find all inflection points of  $f(x)$ .

(e) Carefully graph  $y = f(x)$ . Clearly show all points you found in parts (c) and (d).

