

Books, notes (in any form), calculators, etc., are not allowed. You must *show all your work* for full credit. Good Luck!

1. (15 pts) Given the following function and its derivatives

$$f(x) = \frac{2x^2}{x^2 + 3}$$

$$f'(x) = \frac{12x}{(x^2 + 3)^2}$$

$$f''(x) = \frac{-36(x^2 - 1)}{(x^2 + 3)^3}$$

(a). Fill in the following information about the function and its graph. Show all work and write “none”, if applicable.

domain: _____

x-intercept(s): _____

y-intercept: _____

vertical
asymptote(s): _____

horizontal
asymptote(s): _____

slant asymptote: _____

critical numbers: _____

intervals where
increasing: _____

intervals where
decreasing: _____

coordinates of
local max(s): _____

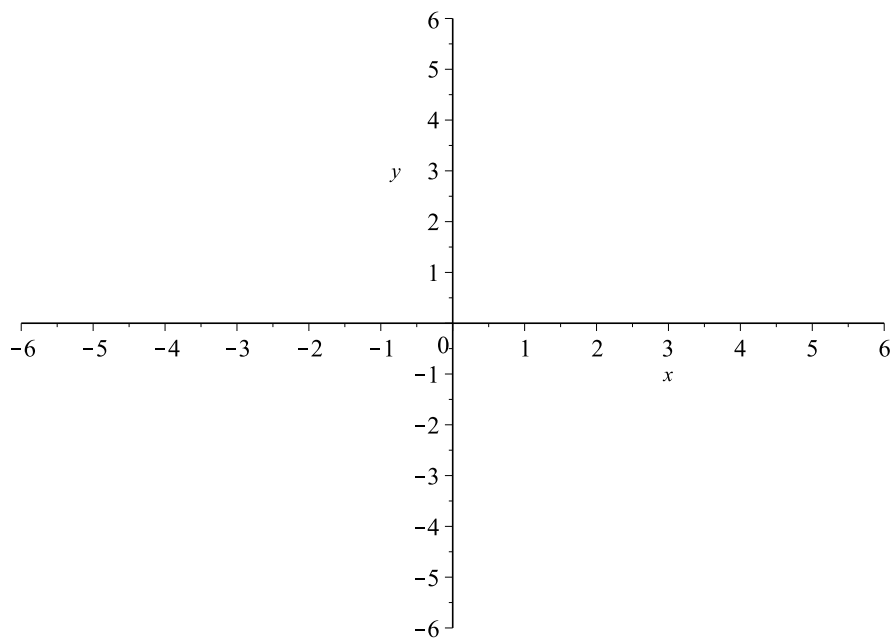
coordinates of
local min(s): _____

intervals where
concave up: _____

intervals where
concave down: _____

Inflection Point(s): _____

- (b). Sketch the graph of the function on the set of axes provided. Label any maximum and minimum values and inflection points.



Just an extra set of axes, in case you need it.

