Math 151-01 **07 November 2017**

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

$$f(x) = \frac{-2x^2}{x^2+3} \qquad f'(x) = \frac{-12x}{(x^2+3)^2} \qquad f''(x) = \frac{36(x^2-1)}{(x^2+3)^3}$$

(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): _____

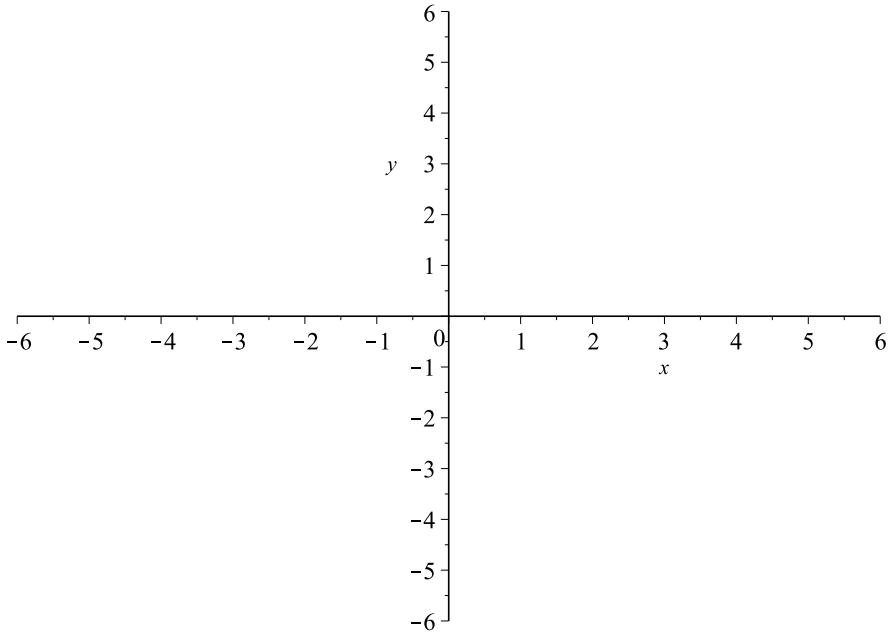
coordinates of local min(s): _____

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.