Math 161 11/07/13

Quiz 5 25 Minutes

Name: _____

Student ID: _____

Show all work to receive full credit.
Cross out all work you don't want graded.
Circle your final answer.

1. Consider the function $f(x) = \dfrac{x^2}{x^2-4}$ $\left[f'(x) = \dfrac{-8x}{(x^2-4)^2}\ ,\ f''(x) = \dfrac{8(3x^2+4)}{(x^2-4)^3}\right]$

   (a) What is the domain of f?

   (b) What are the x-intercepts and the y-intercepts?

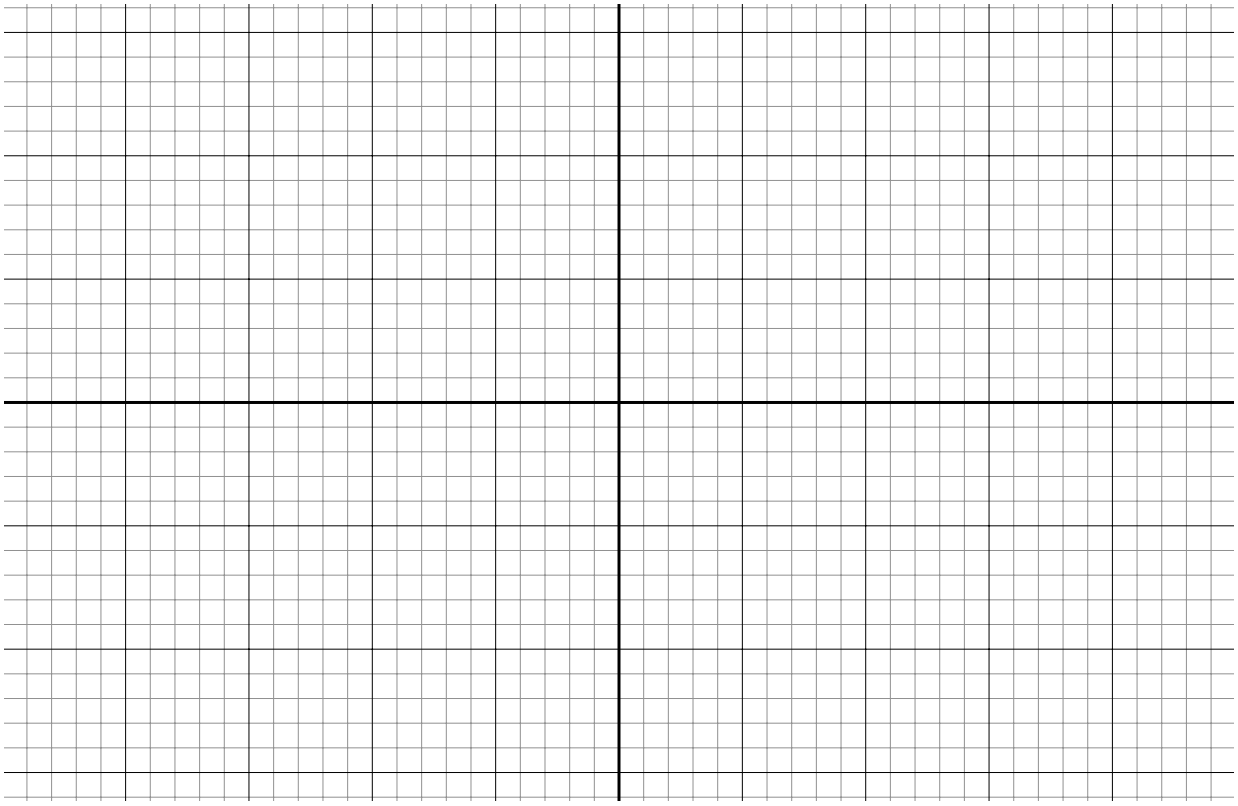
   (c) Determine the symmetry of the function (odd/even)?

(d) What are the vertical and horizontal asymptotes of f?

(e) Find the intervals where f is increasing and the intervals where f is decreasing. Find the local maximum and local minimum values.(Express it in the form $(x, f(x))$.

(f) Find the intervals where f is concave upward and the intervals where f is concave downward. Find the inflection points. (Express it in the form $(x, f(x))$

(g) With the information above, sketch the graph of the curve.



2. Find the dimensions of a rectangle with perimeter $88m$ whose area is as large as possible.