1. Given the following function and its derivatives

$$f(x) = \frac{2(x^2-9)}{x^2-4} \qquad f'(x) = \frac{20x}{(x^2-4)^2} \qquad f''(x) = \frac{-20(3x^2+4)}{(x^2-4)^3}$$

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): _____

Sketch the graph of the function on the set of axes provided separately.

2. Given the following function and its derivatives

$$f(x) = x\sqrt{x^2-4} \qquad f'(x) = \frac{2(x^2-2)}{\sqrt{x^2-4}} \qquad f''(x) = \frac{2x(x^2-6)}{(x^2-4)^{3/2}}$$

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): _____

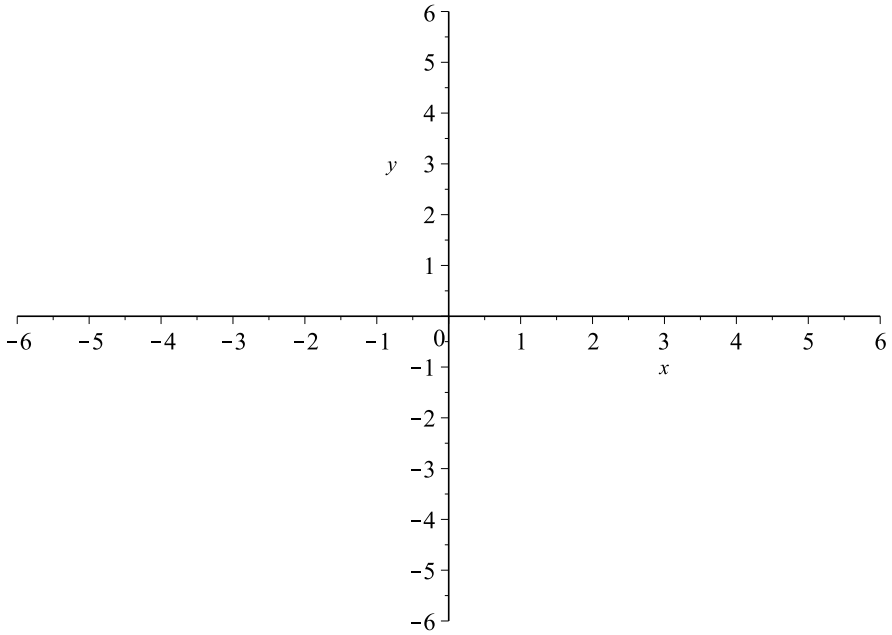
intervals where concave up: _____

intervals where concave down: _____

Inflection Point(s): _____

Sketch the graph of the function on the set of axes provided separately.

Sketch the graph of the function $f(x) = \dfrac{2(x^2-9)}{x^2-4}$ from Example 1. Label any maximum and minimum values and inflection points.



Sketch the graph of the function $f(x) = f(x) = x\sqrt{x^2-4}$ from Example 2. Label any maximum and minimum values and inflection points.