MATH 151
Mrs. Bonny Tighe

QUIZ 6

25 points
4.4,4.5

NAME _____

Section _____ Fri 3/31/06

1. Sketch the graph of each of the following functions by finding the critical points, intervals of increasing and decreasing, inflection points, intervals of concave up and concave down, asymptotes and intercepts.

a) $f(x)=x^3-3x^2-9x+27$

b) $y=\frac{x^2-4}{1-x^2}$

2. Find the limit:

a) $\lim_{x\to\infty} \dfrac{(x-1)(3-2x)}{(x+2)(2-3x)} =$ _____

b) $\lim_{x\to+\infty} \left(\sqrt{x^2+2x-1} - x\right) =$ _____

c) $\lim_{x\to\infty} \dfrac{2+x^2}{\sqrt{x^3+1}} =$ _____

d) $\lim_{x\to\infty} (x-1)^4(2-x)^2(x+2)^2 =$ _____

3. Show that a third-degree polynomial, $f(x) = ax^3 + bx^2 + cx + d$, always has exactly one point of inflection.

4. Find the slant asymptotes and the vertical asymptotes for the following functions.

a) $f(x) = \dfrac{3-x^2}{x+2}$

b) $g(x) = \dfrac{3x^3+2x^2-5x+2}{x^2-1}$