

MATH 151
Mrs. Bonny Tighe

QUIZ 6A

25 points
4.4, 4.5, 4.7

NAME _____

Section _____ Fri 3/31/06

1. Find the limit:

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

b) $\lim_{x \rightarrow \infty} \left(x - \sqrt{x^2 + 3x + 2} \right) =$ _____

c) $\lim_{x \rightarrow \infty} \frac{x^2 - 3}{\sqrt{x^3 + 2}} =$ _____

d) $\lim_{x \rightarrow \infty} (x-1)^4 (2-x)^3 (x+2)^2 =$ _____

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

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

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

b) $g(x) = \frac{2 + 3x - 4x^2 + 4x^3}{2x^2 - 8}$

5. 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) $f(x) = 2x^3 - 6x^2 - 18x + 6$

b) $y = \frac{x^2 - 1}{9 - x^2}$