

Quiz 4 for Mathematics 223
Introductory Analysis I - Fall 2001
Material Covered: Section 3.4 of workbook and text
For: Friday, 19th October

This is a 15 minute quiz, worth 5% and marked out of 5 points.

Name (please print): _____ . ID Number: _____
last first

1. [2 points] Determine the following limits.

(a) $\lim_{x \rightarrow \infty} \frac{-3x^3 - x + 1}{4x^3 - 3x^2 + 5x} =$ _____

(b) $\lim_{x \rightarrow \infty} \frac{6x^2 + x}{-4x^4 + 5} =$ _____

2. [1 point] The function $f(x) = \left| \frac{1}{x+4} - 2 \right|$

(a) has (a) horizontal asymptote(s) at
(circle none, one or more) $y = -4$ / $y = -2$ / $y = 0$ / $y = 2$ / $y = 4$

(b) has (a) vertical asymptote(s) at
(circle none, one or more) $x = -4$ / $x = -2$ / $x = 0$ / $x = 2$ / $x = 4$

3. [2 points] The function $f(x) = \frac{4x^2 + 11x - 15}{x+4}$

(a) has an oblique asymptote at (circle one)
 $y = 4x - 5$ / $y = 4x - 4$ / $y = 4x - 3$ / $y = 4x - 2$ / $y = 4x - 1$

(b) has a vertical asymptote at (circle one)
(circle one) $x = -4$ / $x = -2$ / $x = 0$ / $x = 2$ / $x = 4$

(1) (a) $-\frac{3}{4}$; (b) 0

(2) (a) $y = 2$ (b) $x = -4$

(3) (a) $y = 4x - 5$; (notice $\frac{4x^2+11x-15}{x+4} = 4x - 5 + \frac{5}{x+4}$)
(b) $x = -4$